Documentation of medicinal plants used by Aneuk Jamee tribe in Kota Bahagia Sub-district, South Aceh, Indonesia

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Abstract. Suwardi AB, Mardudi, Navia ZI, Baihaqi, Muntaha. 2021. Documentation of medicinal plants used by Aneuk Jamee tribe in Kota Bahagia sub-district, South Aceh, Indonesia. Biodiversitas 21: 6-15. Aneuk Jamee is one of the ethnic communities living along the western-south coast of Aceh. Various plants are used by the Aneuk Jamee tribe as a traditional medicine in treating diseases and disorders. The aim of this study was therefore to document the medicinal plants used by the Aneuk Jamee tribe in the Kota Bahagia sub-district, South Aceh, Indonesia. This study was conducted in three villages, namely Jumbo Keupok, Seunebok Kurani, and Alur Dua Mas, Kota Bahagia subdistrict, South Aceh District, Aceh Province. This study was based on field surveys, plant collection, and interviews with the local people. Interviews were performed with 60 informants selected using the Snowball Sampling technique. A total of 96 medicinal plant species, consisting of 50 families, have been documented to be used by the Aneuk Jamee tribe in the Kota Bahagia subdistrict. Fifty-nine (61%) species are cultivated and 37 (39%) species are wild. Leaves are the most widely used plant part (28%), followed by the fruit (19%), flower and tuber (6% each), seed (3%), and sap (2%) and the main mode of preparations are decoction (60%), followed by raw consumption (14%), smeared (10%), pounded (7%), dropped (6%), and affixed and squeezed (1% each). The high informant consensus factor (ICF=0.98) was assigned to the diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism category.

Keywords: Biodiversity, Traditional medicine, Aneuk Jamee, Kota Bahagia

INTRODUCTION

Plants are valuable in human livelihoods, providing a source of nourishment (Navia and Chikmawati 2015; Elfrida et al. 2010; Navia et al. 2019; Navia et al. 2020a; Suwardi et al. 2020a; Suwardi et al. 2020b), condiments and spices (Navia et al. 2020b), fragrances (Dar et al. 2017), ritual or magical values (Abbink 1995; Sutrisno et al. 2020), and traditional medicine (Liu et al. 2009; Silalahi et al. 2015; Nurlinda et al. 2018; Tsoutsisoi et al. 2019; Suwardi et al. 2019; Gowramma et al. 2020). Indonesia comprises more than 40,000 species of plants, of which approximately 6,000 have been used in traditional healing processes (Elfahmi et al. 2014). These plants are considered for their richness in biologically active secondary metabolites and essential oils for disease prevention (Ngbolua et al. 2018; Suwardi et al. 2018; Ortiz et al. 2020), and human beings have refined medicinal plants and their chemical properties in varying ways for therapeutic usages (Colalito 2018; Kumar et al. 2018). Traditional medicine has been focused on meeting the objectives of wider coverage of primary healthcare provision across all countries of the world (Bekalo et al. 2009). The World Health Organization (WHO) has confirmed that about 80% of the people living in developing countries rely on medicinal plants as part of their healthcare system (Ngbolua et al. 2016). The relationship between humans and plants has long been identified as one of the aspects of human civilization, particularly in medicinal domains (Yeung et al. 2020).

Aneuk Jamee is one of the ethnic communities in Indonesia inhabiting along the west-south coast of Aceh (Melalatoa 1995). Historical evidence suggests that the Minang tribe from West Sumatra migrated to western Aceh in the 17th century and assimilated with the indigenous population to establish new customs and culture recognized as Aneuk Jamee (Ramlí and Erwandi 2019). Like most tribes in the province of Aceh, Aneuk Jamee also uses various species of plants as traditional medicines. This knowledge is gained through experience passed down from generation to generation. However, the knowledge of medicinal plants possessed by rural communities has rarely been documented and is generally known merely to the elderly or traditional healers. Moreover, the younger generation, especially those already integrated into modern life, is less concerned with this traditional knowledge (Maulidiah et al. 2020). Several previous studies have shown the lack of ability of older generations to pass traditional knowledge to the younger generation (Sousa et al. 2012; Saynez-Vaquest et al. 2016; Navia et al. 2020a), resulting in the disaffection of younger generations from their surrounding environment and the ultimate loss of

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nature-related information. Traditional knowledge and use of medicinal plants are an integrated component among the Aneuk Jamee tribe, the extent of which has not yet been extensively studied. Documentation of medicinal uses of plants across ethnobotanical studies is important as an opportunity to promote the development of pharmaceutical drugs and the conservation of plants (Calzada and Bautista 2020). Various ethnobotanical studies suggest the use of medicinal plants for the treatment that has been used in their respective populations over several generations (Navia et al. 2020a; Navia et al. 2020b; Sutrisno et al. 2020; Suwardi et al. 2020c). The aim of this study was therefore to document the medicinal plants used by the Aneuk Jamee tribe in the Kota Bahagia sub-district, South Aceh, Indonesia.

**MATERIALS AND METHODS**

**Study area**

South Aceh district is located between 02° 23'24"-03°44'24" N and 96°57'36" - 97°56' 24" E with an average elevation of 25 meters above sea level (masl). This district has an area of 4,173.67 km² with land use is dominated by protected areas, namely protected forests (36.5%), Gunung Leuser National Park (18.8%), Trumon Wildlife Reserve (13.9%), Animal Corridors (0.2%), Coastal Border (0.3%) and River Border (1.2%) of the total area. South Aceh district consists of 18 sub-districts and 260 villages with a total population of 238,081,000 people (The Central Bureau of Statistics of South Aceh District 2020).

Kota Bahagia is one of the subdistricts in the South Aceh district located between 3°04'46" N, 97°33'30" E, 0.6-44.2 masl. Climatic conditions in the Kota Bahagia subdistrict are tropical humid, having an average annual rainfall varying 161.33 mm -440.78 mm, and the average daily temperature of the area is 29°C. This subdistrict has an area of 195.82 km² with a total population of 7,266 people consisting of 3,580 men and 3,686 women (The Central Bureau of Statistics of South Aceh District 2020). The study was conducted from July to Sept 2020 in the Jombo Keupok, Seuneubok Kuranti, and Alur Dua Mas villages, Kota Bahagia subdistrict, South Aceh District, Aceh Province (Figure 1).

**Data collection**

Data were collected through in-depth interviews with 60 informants who were selected using the Snowball Sampling technique (Table 1). Key people are people who practice the use of plants for traditional medicines. Subsequent informants were determined by the direction of the previous respondents. The interview activities have been carried by using a semi-structured questionnaire to assess traditional practices for the use of medicinal plant species, the part used, and the mode of preparation.

![Figure 1. Map of Kota Bahagia Subdistrict, South Aceh District, Aceh Province, Indonesia showing the study area](image-url)
The samples of plants were collected along with noting down their vernacular names. The identification of plant species was conducted in the Laboratory of Biology, Samudra University, Aceh, Indonesia. The botanical names have been updated using the Plants of the World online. (http://www.plantsoftheworldonline.org). For this study, we do not deposit plant specimens into the herbarium.

Data analysis

Use Value (UV)

The Use Value is calculated as the proportion of the number of citations per species (U) to the number of informants (N) following Polat et al. (2015):

\[ \text{UV} = \frac{U}{N} \]

High UV implies high use-reports for a plant that possesses significance to the local community. Low UV suggests that there are few reports related to its use.

Informant Consensus Factor (ICF)

Informant Consensus Factor (ICF) is determined by using the following Cornara et al. (2014):

\[ \text{ICF} = \frac{\text{Nur} - \text{Nt}}{\text{Nur} - 1} \]

Where Nur is the number of useful reports in each category and Nt is the number of species used by all informants for a particular category.

RESULTS AND DISCUSSION

Characteristics of medicinal plants

A total of 96 medicinal plant species, consisting of 50 families, have been documented which are used by the Aneuk Jamee tribe in the Kota Bahagia subdistrict (Table 2). Lamiaceae and Fabaceae are the most represented plant family with 7 species, followed by Asteraceae (6 species), Euphorbiaceae (5 species), and Acanthaceae, Amaranthaceae, Areceae, Rubiaceae, and Solanaceae with 4 species each. The other 41 families possess one to 3 representative species each. Fifty-nine (61.46%) species are cultivated and 37 (38.54%) species are wild. *Piper betle* and *Psidium guajava* are common plant species that have been used as traditional medicine by local people in the study area. *P. betle* widely found planted in home gardens and consistent with the reported in West Java, Central Java, East Java, and Bali (Sari et al. 2015). Respondents stated that along with the use as medicine, *P. betle* is also used as a material in traditional ceremonies. In addition, *P. guajava* provides multiple purposes, along with that plant as a medicine, this plant harvested the fruit for raw consumption. *P. guajava* has widely grown in the home garden, in line with the report by Elfrida et al. (2020) in the Aceh Tamiang district. The average number of species identified by each age group of the respondent ranged from 12.8 ± 0.11 (15-25 years) to 94.81 ± 0.02 (> 65 years). In addition, the average number of species identified by each educational status of the respondent ranged from 22.8 ± 1.14 (Senior High School) to 42.22 ± 0.12 (Junior High School). Thirty-seven (38.5%) medicinal plants were recognized by all respondents include *Durio zibethinus*, *Myristica fragrans*, *P. betle*, *P. guajava*, and *Kaempferia galanga*.

Plant part used

The leaves (28%) were the most used as traditional medicine, followed by the fruit (19%), flower and tuber (6% each), seed (3%), and sap (2%). Certain diseases are treated with the whole plant, approximately 20% of the total plant species identified in this study area (Figure 2).

Leaves are the most commonly used part for an ethnomedical practice of the Aneuk Jamee tribe. The leaves have been widely used in traditional medicine due to the presence of bioactive compounds other than parts of plants (Ismail and Ahmad 2019). These studies are consistent with the reports by Tantengco et al. (2018) that local communities in the Philippines have the most used leaves in ethnomedical practices compare to other parts of the plants. During the discussion, the respondents stated that leaves are also easy to collect and are the most abundant part of the plant. In addition, the use of plant parts as traditional medicine can protect plants and ensure the sustainability of plant usage. Leaves are known to synthesis a wide range of secondary metabolites such as alkaloids, saponins, and phenolic compounds (Ghorbani 2005; Tantengco et al. 2018) that could be concerned for the pharmacological effects encountered by the Aneuk Jamee tribe. Several of the plants used as traditional medicine by the Aneuk Jamee tribe, such as *Psidium guajava*, are known to have flavonoids and tannins expressing antioxidant activity (Ezquezlesli et al. 2010; Shakeera et al. 2013). In addition, secondary metabolites such as flavonoids, tannins, glycosides, and terpenoids, revealed by *P. guajava* leaves extract, have been reported to have various pharmacological properties such as antibacterial, anticoag, antidiabetic, antihyperlipidemic, cardioprotective, antimutagenic, hepatoprotective, and larvicidal (Ngbolua et al. 2018).

| Parameter | Specification | Frequency | Percentage |
|-----------|---------------|-----------|------------|
| Gender    | Male          | 38        | 63.3       |
|           | Female        | 22        | 36.7       |
| Age       | 15-25         | 5         | 8.3        |
|           | 26-35         | 12        | 20         |
|           | 36-45         | 15        | 25         |
|           | 46-55         | 14        | 23.3       |
|           | 56-65         | 10        | 16.7       |
|           | >65           | 4         | 6.7        |
| Education | None          | 6         | 10         |
|           | Elementary School | 17   | 28.3       |
|           | Junior High School | 16  | 26.7       |
|           | Senior High School | 16   | 26.7       |
|           | University    | 5         | 8.3        |
| Scientific name                  | Family                  | Vernacular name   | Plant type | Habit       | Part used          | Mode of preparation          | Disease                                      | UV  |
|----------------------------------|-------------------------|-------------------|------------|-------------|-------------------|------------------------------|----------------------------------------------|-----|
| Acalypha australis L.            | Euphorbiaceae           | Anting-anting     | Shrub      | Wild        | Whole plants      | Decoction, smeared            | Wounds, diarrhoea, dysentery, cough          | 0.30|
| Acalypha hispida Burm.f.         | Euphorbiaceae           | Ekor kucing       | Shrub      | Cultivated  | Leaves, flower    | Decoction, pounded, smeared   | Dysentery, nosebleed, anthelmintic, skin burn | 0.68|
| Acanthus ebracteatus Vahl        | Acanthaceae             | Jenuju            | Herb       | Wild        | Leaves            | Decoction                    | Hepatitis                                   | 0.30|
| Achyranthes aspera L.            | Amaranthaceae           | Bungo bayom       | Herb       | Cultivated  | Leaves, flower    | Decoction                    | Fever, malaria, rheumatism, dysmenorrhea    | 0.80|
| Adenanthera pavonina L.          | Fabaceae                | Si baiy           | Tree       | Wild        | Leaves            | Decoction                    | Gastric ulcer                               | 0.53|
| Agaratum conyzoides L.           | Asteraceae              | Simamih           | Herb       | Wild        | Leaves            | Smeared, decoction           | Sore throat, wounds, itch                   | 0.47|
| Alpinia galanga (L.) Wild.       | Zingiberaceae           | Langkuweh         | Herb       | Cultivated  | Tubers            | Decoction                    | Cough, fever, flatulence, stomachache       | 0.97|
| Amaranthus spinosus L.           | Amaranthaceae           | Bayam duri        | Herb       | Cultivated  | Whole plants      | Decoction, smeared           | Fever, diarrhoea                            | 0.68|
| Annona muricata L.               | Annonaceae              | Dzenlando         | Tree       | Cultivated  | Fruit             | Raw consumption             | Gastric ulcer, sprue, hypertension          | 0.97|
| Areca catechu L.                 | Arecaceae               | Pinang            | Palm       | Cultivated  | Seed              | Raw consumption             | Gastric ulcer, jaundice, itch              | 0.95|
| Arenga pinnata (Wurmb) Merr.     | Arecaceae               | Ijouk             | Palm       | Wild        | Leaves            | Decoction                    | Diabetes                                    | 0.53|
| Artemisia vulgaris L.            | Asteraceae              | Barucina          | Herb       | Wild        | Leaves            | Decoction                    | Dysentery, diarrhea, leukorrhea             | 0.30|
| Averrhoa bilimbi L.              | Oxalidaceae             | Limbieng          | Tree       | Cultivated  | Fruit             | Raw consumption             | Hypertension                                | 0.53|
| Barleria cristata L.             | Acanthaceae             | Daun madu         | Herb       | Cultivated  | Whole plants      | Decoction, pounded, smeared  | Gastric ulcer, pimple                       | 0.37|
| Basella alba L.                  | Basellaceae             | Limayuang         | Herb       | Cultivated  | Leaves, fruit     | Decoction, pounded, smeared  | Gastric ulcer, toothache, insomnia, skin burn | 0.48|
| Bidens pilosa L.                 | Asteraceae              | Bungo adet-adet   | Herb       | Wild        | Whole plants      | Decoction                    | Tuberculosis, haematemesis                | 0.43|
| Canna indica L.                  | Cannaceae               | Bunga tasbih      | Herb       | Cultivated  | Leaves, flowers   | Decoction                    | Hypertension, fever, jaundice              | 0.52|
| Carica papaya L.                 | Caricaceae              | Botiek            | Shrub      | Cultivated  | Leaves            | Raw consumption, decoction   | Fever, malaria                              | 0.93|
| Celosia argentea L               | Amaranthaceae           | Bungo bayom       | Herb       | Cultivated  | Leaves            | Decoction                    | Hypertension                                | 0.78|
| Centella asiatica (L.) Urb.      | Apiceae                 | Pegago            | Herb       | Cultivated  | Whole plants      | Decoction                    | Cough                                       | 0.58|
| Chromolaena odorata (L.)         | Asteraceae              | Tutuba            | Shrub      | Wild        | Leaves            | Decoction, pounded, smeared  | Gastric ulcer, wounds                      | 0.37|
| R.M.King & H.Rob.                |                         |                   |            |             |                  |                              |                                              |     |
| Citrus maxima (Burm.) Merr.      | Rutaceae                | Jeruk bali        | Tree       | Cultivated  | Fruit             | Raw consumption             | Sprue                                       | 0.82|
| Clerodendrum chinense (Osbeck) Mabb. | Lamiaceae            | Bungo balai       | Shrub      | Wild        | Flower            | Decoction                    | Sore throat, sprue                         | 0.65|
| Clerodendrum indicum (L.) Kuntze | Lamiaceae               | Rumput pikuben    | Shrub      | Wild        | Leaves, flower    | Decoction                    | Gastric ulcer, diabetes                    | 0.27|
| Clerodendrum thomsoniae Ball.f. | Lamiaceae               | Kantin            | Shrub      | Wild        | Flower            | Decoction                    | Irritant contact dermatitis due to plants   | 0.28|
| Clinacanthus nutans (Burm.f.) Lindau | Acanthaceae            | Sogi iju          | Herb       | Cultivated  | Leaves            | Decoction                    | Sore throat, sprue                         | 0.27|
| Cocos nucifera L.                | Arecaaceae              | Karambie          | Palm       | Cultivated  | Fruit             | Decoction                    | Diarrhoea, digestive problems, constipation | 0.77|
| Coleus amboinicus Lour.          | Lamiaceae               | Nilam bai         | Herb       | Wild        | Leaves            | Decoction                    | Hepatitis                                   | 0.72|
| Colubrina asiatica (L.) Brong.   | Rhamnaceae              | Pilaht             | Shrub      | Cultivated  | Leaves            | Decoction                    | Fever, sore throat                         | 0.53|
| Combretum indicum (L.) DeFilippis | Combretaceae            | Pocah pingen      | Climber    | Wild        | Leaves, flower    | Decoction                    | Anthelmintic                                | 0.42|
| Cordyline fruticosa (L.) A.Chev. | Asparagaceae            | Junjuang          | Shrub      | Cultivated  | Whole plants      | Smearred                     | Bruise, wounds                             | 0.32|
| Scientific Name                        | Family           | Plant Type | Cultivation Status | Parts Used          | Use                          | Effect                                      |
|--------------------------------------|------------------|------------|--------------------|---------------------|-------------------------------|---------------------------------------------|
| Crinum asiaticum L.                  | Amaryllidaceae   | Herb      | Cultivated         | Leaves, flower       | Decoction                     | Cough, bruise, hypertension                 |
| Cucumis melo L.                      | Cucurbitaceae    | Herb      | Cultivated         | Leaves              | Decoction                     | Wounds, bruise, rheumatism                  |
| Cyclea barbata Miers                 | Menispermaceae   | Herb      | Cultivated         | Leaves              | Decoction                     | Sore throat, sprue                         |
| Cymbopogon citratus (DC.) Stapf      | Poaceae          | Grass     | Cultivated         | Whole plants        | Decoction                     | Sore throat, sprue, hypertension            |
| Cyperus rotundus L.                  | Cyperaceae       | Grass     | Cultivated         | Leaves, flower      | Decoction, squeezed           | Cough                                       |
| Decalobanthus mammosus (Lour.)       | Convolvulaceae   | Climber   | Cultivated         | Tuber               | Pounded, decoction            | Cough, bruise                              |
| A.R. Simões & Staples               |                  |           |                    |                     |                               |                                             |
| Dioscorea alata L.                  | Dioscoreaceae    | Climber   | Wild               | Tuber               | Pounded, decoction            | Sore throat, sprue                         |
| Dioscorea hispida Dennst.            | Dioscoreaceae    | Climber   | Wild               | Tuber               | Pounded, decoction            | Sore throat, sprue                         |
| Durio zibethinus L.                  | Malvaceae        | Tree      | Cultivated         | Fruit               | Raw consumption              | Hypertension                               |
| Erythrina subumbrans (Hassk.) Merr.  | Fabaceae         | Tree      | Wild               | Leaves, flower, fruit| Decoction                     | Anemia, rheumatism                         |
| Erythrina variegata L.               | Fabaceae         | Tree      | Wild               | Leaves, flower, fruit| Decoction                     | Jaundice                                   |
| Euphorbia hirta L.                   | Euphorbiaceae    | Herb      | Wild               | Whole plants        | Dropped                       | Eye inflammations                           |
| Gomphrena globosa L.                 | Amaranthaceae    | Herb      | Cultivated         | Flower              | Decoction                     | Fever, cough, dysentery, diarrhoea          |
| Gynura japonica (Thunb.) Juel        | Asteraceae       | Herb      | Wild               | Leaves              | Decoction                     | Flu, fever, diarrhoea, diabetes             |
| Helenium speciosa (J. Koenig) S.R. Dutta | Costaceae       | Herb      | Wild               | Leaves              | Decoction                     | Gastric ulcer                              |
| Hibiscus rosa-sinensis L.            | Malvaceae        | Shrub     | Cultivated         | Flower              | Decoction                     | Gastric ulcer                               |
| Hippobroma longiflora (L.) G.Don     | Campanulaceae    | Herb      | Cultivated         | Leaves, flower      | Dropped                       | Eye inflammations                           |
| Illicium verum Hook.f.               | Schisandraceae   | Tree      | Cultivated         | Fruit               | Decoction                     | Fever, sore throat, sprue, diarrhoea        |
| Imperata cylindrica (L.) P. Beauv.    | Poaceae          | Grass     | Whole plants       | Whole plants        | Dropped                       | Fever, sore throat                          |
| Jasminum sambac (L.) Aiton           | Oleaceae         | Tree      | Cultivated         | Leaves, flower      | Dropped                       | Eye inflammations                           |
| Justicia gendarussa Burm.f.          | Acanthaceae      | Herb      | Cultivated         | Leaves              | Dropped                       | Wounds, toothache                          |
| Kaempferia galanga L.                | Zingiberaceae    | Herb      | Cultivated         | Leaves              | Dropped                       | Sore throat                                 |
| Kalanchoe pinnata (Lam.) Pers.       | Crassulaceae     | Herb      | Cultivated         | Tubers              | Decoction                     | Sore throat                                 |
| Lantana domesticum Corrêa            | Meliaceae        | Shrub     | Cultivated         | Leaves              | Decoction                     | Fever                                       |
| Lawsonia inermis L.                  | Lythraceae       | Herb      | Cultivated         | Leaves              | Decoction                     | Fever                                       |
| Lophatherum gracile Bronn.           | Poaceae          | Grass     | Wild               | Whole plants        | Dropped                       | Sore throat                                 |
| Luffa acutangula (L.) Roxb.          | Cucurbitaceae    | Climber   | Cultivated         | Flower              | Decoction                     | Hypertension                                |
| Luffa aegyptiaca Mill.               | Cucurbitaceae    | Climber   | Cultivated         | Flower              | Decoction                     | Hypertension                                |
| Magnolia x alba (DC.) Figlar         | Magnoliaceae     | Tree      | Cultivated         | Flower              | Decoction                     | Gastric ulcer                               |
| Magnolia champaca (L.) Baill. ex Pierre | Magnoliaceae   | Tree      | Cultivated         | Flower              | Decoction                     | Gastric ulcer                               |
| Manilkara zapota (L.) P. Royen       | Sapotaceae       | Herb      | Wild               | Leaves              | Decoction                     | Wounds, diarrhoea                           |
| Melastoma malabathricum L.           | Melastomataceae  | Shrub     | Wild               | Leaves              | Dropped                       | Stroke, Influenza, headache, diabetes,      |
| Mirabilis jalapa L.                  | Nyctaginaceae    | Herb      | Cultivated         | Whole plants        | Dropped                       | Hypertension                                |
| Morinda citrifolia L.                | Rubiaceae        | Tree      | Cultivated         | Fruit               | Raw consumption, decoction    | Gastric ulcer, pimple                       |
| Murraya koenigii (L.) Spreng.        | Lamiaceae        | Shrub     | Wild               | Leaves              | Decoction                     | Diarrhoea, diabetes, sore throat            |
| Myristica fragrans Houtt.            | Myristicaceae    | Tree      | Cultivated         | Seed                | Pounded, smeared              | Sprain                                      |

| Species                        | Pharmacological Activity                                      |
|--------------------------------|---------------------------------------------------------------|
| C. asiaticum                    | Eye inflammation, fever, diarrhoea, hypertension               |
| C. melo                         | Hypertension                                                  |
| C. barbata                      | Rheumatism, sprue                                            |
| C. citratus                     | Rheumatism, sprue, hypertension                               |
| C. rotundus                     | Cough, bruise                                                 |
| D. alata                        | Sore throat, sprue                                           |
| D. hispida                      | Sore throat, sprue, hypertension                              |
| D. zibethinus                   | Anemia                                                        |
| E. subumbrans                   | Sore throat, hepatitis                                        |
| E. variegata                    | Jaundice                                                      |
| E. hirta                        | Eye inflammations                                            |
| G. globosa                      | Fever, cough, dysentery                                       |
| G. japonica                     | Fever, diarrhoea                                              |
| H. speciosa                     | Fever, diabetes                                               |
| H. rosa-sinensis                | Gastric ulcer                                                 |
| I. verum                        | Fever, sore throat, diarrhoea                                  |
| I. cylindrica                   | Fever, sore throat, sprue                                     |
| J. sambac                       | Eye inflammations                                            |
| J. gendarussa                   | Sore throat                                                   |
| K. galanga                      | Fever, diarrhoea                                              |
| K. pinnata                      | Fever                                                         |
| L. domesticum                   | Malaria                                                       |
| L. inermis                      | Gastric ulcer                                                 |
| L. rupinata                      | Gastric ulcer                                                 |
| L. acutangula                   | Hypertension                                                  |
| L. aegyptiaca                   | Fever                                                         |
| M. x alba                       | Eye inflammations                                            |
| M. champaca                     | Gastric ulcer                                                 |
| M. zapota                       | Wounds, diarrhoea                                             |
| M. koenigii                     | Stroke, Influenza, headache, diabetes, hypertension, rheumatism|
| M. koenigii                     | Diarrhoea, diabetes, sore throat                              |
| M. fragrans                     | Sprain                                                        |
| Scientific Name                 | Family     | Common Name(s) | Life Form | Part(s)        | Preparation | Uses                                      | Index Number |
|--------------------------------|------------|----------------|-----------|----------------|-------------|-------------------------------------------|--------------|
| Nicandra physalodes (L.) Gaertn.| Solanaceae | Solanaceae     | Wild      | Fruit          | Decoction   | Hypertension                              | 0.38         |
| Nicotiana tabacum L.            | Solanaceae | Solanaceae     | Cultivated| Leaves         | Decoction   | Jaundice                                  | 0.30         |
| Nypa fruticans Wurmb.           | Arecaceae  | Arecaceae      | Cultivated| Leaves         | Decoction   | Jaundice                                  | 0.37         |
| Ocimum tenuiflorum L.           | Lamiaceae  | Lamiaceae      | Shrub     | Whole plants   | Raw consumption | Fever, sore throat                      | 0.88         |
| Oldenlandia corymbosa L.        | Rubiaceae  | Rubiaceae      | Shrub     | Leaves         | Decoction   | Hepatitis                                 | 0.55         |
| Orthosiphon aristatus (Blume) Miqu. | Fabaceae  | Fabaceae       | Clumper   | Leaves, flower | Decoction   | Diabetes, hypertension, bladder stone     | 0.47         |
| Pachyrhizus erosus (L.) Urb.    | Fabaceae   | Fabaceae       | Clumper   | Tuber          | Raw consumption | Influenza, sore throat                  | 0.60         |
| Paederia foetida L.             | Rubiaceae  | Rubiaceae      | Clumper   | Whole plants   | Decoction   | Flatulence                                | 0.38         |
| Pandanus amarylifolius Roxb. ex Lindl. | Pandanaceae | Pandanaceae | Shrub     | Whole plants   | Decoction   | Fever, insomnia, hypertension           | 0.65         |
| Persea americana Mill.          | Lauraceae  | Lauraceae      | Tree      | Fruit          | Raw consumption | Eye inflammations                          | 0.37         |
| Phyllanthus acidus (L.) Skeels  | Phyllanthaceae | Phyllanthaceae | Tree      | Fruit          | Raw consumption | Sprue                                    | 0.32         |
| Phyllanthus niruri L.           | Phyllanthaceae | Phyllanthaceae | Tree      | Whole plants   | Decoction   | Gastric ulcer, diabetes                  | 0.45         |
| Piper betle L.                  | Piperaceae | Piperaceae     | Clumper   | Leaves         | Decoction, pounded, smeared              | 0.98         |
| Plantago major L.               | Plantaginaceae | Plantaginaceae | Herb     | Whole plants   | Decoction     | Cough                                    | 0.78         |
| Plectranthus purpuratus Harv.    | Lamiaceae  | Lamiaceae      | Herb     | Whole plants   | Decoction     | Gastric ulcer, hemorrhoids, hepatitis    | 0.63         |
| Pluchea indica (L.) Lees.       | Asteraceae | Asteraceae     | Herb     | Whole plants   | Decoction     | Flatulence, hepatitis                    | 0.37         |
| Psidium guajava L.              | Myrtaceae  | Myrtaceae      | Tree      | Fruit, leaves  | Raw consumption, decoction               | 0.98         |
| Punica granatum L.              | Punicaceae | Punicaceae     | Tree      | Fruit          | Eaten raw | Stroke, sore throat                      | 0.60         |
| Ricinus communis L.             | Euphorbiaceae | Euphorbiaceae | Tree      | Sap            | Dropped, decoction | Wounds, hermia                          | 0.73         |
| Selaginella doederleinii Hieron | Selaginellaceae | Selaginellaceae | Tree      | Whole plants   | Decoction     | Hepatitis                                | 0.47         |
| Senna alexandrina Mill.         | Fabaceae  | Fabaceae       | Shrub     | Leaves         | Decoction     | Scabies                                   | 0.43         |
| Solanum lasiocarpum Dunal       | Solanaceae | Solanaceae     | Shrub     | Fruit          | Eaten as vegetable | Diabetes                        | 0.58         |
| Solanum nigrum L.               | Solanaceae | Solanaceae     | Shrub     | Fruit, leaves  | Decoction, dropped | Eye inflammations                        | 0.63         |
| Spondias dulcis Parkinson       | Anacardiaceae | Anacardiaceae | Tree      | Fruit, leaves  | Decoction, dropped | Eye inflammations                        | 0.52         |
| Syzygium cumini (L.) Skeels      | Myrtaceae  | Myrtaceae      | Tree      | Leaves, Fruit  | Decoction, Raw consumption               | 0.97         |
| Tamarindus indica L.            | Fabaceae  | Fabaceae       | Tree      | Fruit          | Raw consumption | Sore throat, sprue                      | 0.95         |
| Trema orientale (L.) Blume      | Cannabaceae | Cannabaceae    | Tree      | Leaves         | Decoction     | Cough, asthma, sore throat, fever        | 0.75         |
| Uncaria gambir (W. Hunter) Roxb. | Rubiaceae  | Rubiaceae      | Clumper   | Leaves         | Decoction     | Flatulence                                | 0.73         |
The second-largest proportion of plant parts used by the Aneuk Jamee tribe as traditional medicine is fruit. Averrhoa bilimbi fruit is used by the Aneuk Jamee tribe as a hypertension treatment. Susanti et al. (2017) reported that the extract of A. bilimbi fruit could reduce blood glucose levels and can be used as a treatment for diabetes. A. bilimbi is known to contain flavonoids and saponins that act as antidiabetic agents (Kumar et al. 2013). The natural diuretic activity of A. bilimbi plays a significant role in combating hypertension (Andriyanto et al. 2011). Fruit of Morinda citrifolia is used for stroke, influenza, headache, diabetes, hypertension, and rheumatism, while Solanum lasiocarpum fruit is used for diabetes.

Mode of preparation

The major mode of preparation by the Aneuk Jamee tribe was found to be decoction (60%), followed by raw consumption (15%), smeared (10%), and pounded (7%) (Figure 3).

In order to treat diseases, the Aneuk Jamee tribe applied both internal and external administration routes. Most plant species have been used alone in the treatment of diseases, while several plants are combined. For example, Oldenlandia corymbosa was used alone in the treatment of hepatitis, while Centella asiatica was administered orally for cough treatment in combination with honey. In Indian folk medicine, the C. asiatica are useful for the treatment of asthma, skin disorders, gastric ulcer and body aches, gastric catarrh, kidney troubles, leprosy, stomach disorders, cure dysentery, and improve memory power (Jamial et al. 2007), while in Nepal, the leaf juice mixed with palm leaves used for cooling to body and stomach (Mahato and Chaudhary 2003).

Use value

The use-value (UV) of plants has been calculated to quantify the importance of a specific plant on the basis of how often it is cited by a specific number of people. UV scores ranged from 0.13 to 0.97, with Hellenia speciosa having lower UV (0.22) and Psidium guajava and Piper betle having the highest UV (0.97 each). P. guajava and P. betle are widely used by the Aneuk Jamee tribe to treat various diseases. P. guajava decoction has been used by the Aneuk Jamee tribe to treat various diseases such as dengue and diarrhoea. P. guajava is also the most widely used medicinal plant in many countries, such as Mexico, Africa, Asia and Central America (Naseer et al. 2018). In Andhra Pradesh, India, leaves of guava have been documented for use in mouth gastric ulcer (Lingaiah and Rao 2013), while in North Sikkim, India, raw young leaves and tender shoots of guava have been used for toothache and mouth gastric ulcer (Pradhan and Badola 2008). The decoction of leaves of P. betle is used to treat fever and sore throat, while leaves of P. betle were squeezed and placed on the wounds. P. betle leaf extracts contain bioactive compounds, such as sterol (Pradhan et al. 2013), which are responsible for the antibacterial activity and are suitable for wounds. Essential oil from the leaves of this plant has been used for antiseptic treatment (Amalia et al. 2008). In the traditional Indian system, P. betle leaves are used as digestive and pancreatic lipase stimulating activity (Mula et al. 2008).

Informant consensus factor

Diseases reported by respondents have been classified according to the International Classification of Diseases - 10 ver. 2019 (https://icd.who.int). Out of these categories, ICF values were determined and shown in Table 3.
A total of 47 diseases in 16 categories were documented in the study area. The most common use-report categories are diseases of the respiratory system (631 use-report, 25 species), followed by symptoms, signs and abnormal clinical and laboratory (584 use-reports, 24 species), diseases of the digestive system (503 use-reports, 21 species), diseases of the eye and adnexa (441 use-reports, 18 species), and certain infectious and parasitic diseases (386 use-reports, 13 species). The ICF values ranged from 0.939 to 0.982. The highest ICF value (0.982) is for diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (anemia), while the lowest is for mental and behavioral disorders (0.939). Sandjaja et al. (2013) reported that the prevalence of anemia in rural areas is higher than in urban areas. This is affected by the consumption pattern of rural communities, which is still dominated by vegetables as a source of iron (non-heme iron), resulting in low use and absorption of iron. The respondents cited two species of plants for the treatment of anemia, i.e., *Spondias dulcis* and *Spondias促使*.
Durio zibethinus. During the discussion, the respondents stated that the Aneuk Jame tribe often consumes the fruit of *D. zibethinus* and the young fruits of *S. dulcis* which are believed to prevent anemia. *D. zibethinus* fruit is reported to be rich in nutrients including antioxidants that are important in the prevention of anemia (Amir and Saleh 2014), while *S. dulcis* fruits are rich in bioactive compounds and used in traditional medicines in Sri Lanka, India, Vietnam, and Malaysia to treat anemia, regulate blood glucose levels, and digestive problems (Jayaratna et al. 2020).

Traditional knowledge of medicinal plants in the Aneuk Jame tribe has been passed down from generation to generation. This traditional knowledge, however, is not well documented. Transfer of knowledge is still being carried out orally. However, during discussions with the respondents, it was noted that many children were interested in learning medicinal plants with healers or elders in their village. This traditional knowledge needs to be protected by involving the Indonesian Government through the Education Office with the integration of traditional knowledge into the basic education curriculum. This practice could be an effort to preserve traditional knowledge, natural resources, and biodiversity. Ramadoss and Moli (2011) reported that biodiversity education programs could increase students' knowledge, motivation, and expertise to conserve and protect local natural resources and biodiversity in India.

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