Ethnomedicinal Plants Used by Batak Angkola Subethnic of Bulumario Village, Sipirok, South Tapanuli, North Sumatera
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ABSTRACT
Ethnobotany is interdisciplinary study of human and plants practical use. The study was conducted in Bulumario Village in Sipirok District, South Tapanuli. It has an area of about 3000 ha inhabited by 53 households with a population of 1,319 people. The study was conducted to examine the extent of inhabitants' knowledge toward medicinal use of the plants. The data collection was done by doing field surveys, interviews, and participatory observation under ethnobotany study approach. The data were analyzed by descriptive analysis. Majority of people in Bulumario Village prefer using traditional medicine from plants when it comes to medical treatment. The locals' tradition regarding to various medicinal plants, how to harvest and apply it are all inherited by their ancestors. The people of Bulumario village have been used 65 species of medicinal plants belonging to 37 families for treatment.

Keywords: Ethnomedicine, medicinal plants, local knowledge, Bulu Mario.

1. INTRODUCTION
Indonesia is an archipelago consisting of approximately 17,000 islands. Geographical conditions are the reason for the creation of a rich biodiversity of flora and fauna on land and sea, so Indonesia is known as one of the 'Megabiodiversity' country [4]. In Indonesia there are 25,000-30,000 species of plants, more than 1,500 species of birds, 500-600 species of mammals, 8,500 species of fish and other animals in very large numbers [6] [13]. Various species of plants and wild animals like this are referred to as medicinal uses.
The utilization of plants for medication has been long known. As much as 80 percent of people in developing countries are relying on plants for their medication purpose [5]. The utilization of plants in Indonesia to preserve health has been long applied as civilization develops. One of the concrete evidences is the relief of medicinal plant in Borobudur Temple [10]. Every ethnicity in Indonesia has different perception on ethnomedicine, including about the utilization method of the plants as traditional medicine. This is influenced by the diversity of culture, tradition, and local wisdom of different ethnicities and regions [14].

There are many researches about plant as traditional medicinal uses had been done in Indonesia, such as ethnomedicin study in the Kanum Tribe at Wasur Papua using 37 species of plants to treat 24 types of diseases [15], the Batak Phakpak Subethnic at Surung Mersada used 128 species of plants to treat 24 types of diseases [11], the Batak Simalungun Subethnic used 92 species of medicinal plants [12], and people at SibanggorJulu Village, Mandailing Natal Regency are known to utilize 31 species of medicinal plants [7].

Bulumario Village is a village located in Sipirok District, South Tapanuli Regency, North Sumatra Province. Bulumario Village is a village directly adjacent to the Sibualbuali Nature Reserve. The people in Bulumario Village still upholds local wisdom, but detailed information regarding local wisdom in Bulumario village has not been widely identified. One of the local wisdom is utilization of medicinal plants.
The people of Bulumario Village still believe in natural medication made of natural resources from around the environment. The local people’s knowledge in the utilization of medicinal plants shall be recorded to prevent it from being forgotten as the civilization develops. Therefore, ethnobotany research of medicinal plants in Bulumario Village is essential to save the people’s knowledge on the species of plants and indirectly preserve that valuable plant.
2. MATERIAL AND METHODS

2.1. Time and Study Area

This study was held on August-September 2019 at Bulumario village, Sipirok subdistrict, South Tapanuli Regency, North Sumatera Province. Astronomically Bulumario village is at 01° 35' 23" N and 099° 12' 33" E. The distance from Sipirok Subdistrict to Bulumario village is 9.3 km. The inhabitants of Bulumario village are dominated by Subethnic Batak Angkola and the rest are Subethnic Batak Toba, Batak Mandailing and Batak Simalungun. The main livelihoods of Bulumario people are sugar palm (Arenga pinnata) farmers, Coffee (Coffea arabica) & (Coffea robusta) farmers and rice (Oryza sativa) farmers.

2.2. Respondent

In this study the respondent was native inhabitants who were aged ≥ 30 years old and had knowledge about medicinal plants, such as traditional healer and people who had been their patients. The respondents consists of 45 people with 9 key informants and 36 general respondents. The key informants consist of 1 village head, 1 village secretary, 1 raja adat (Harajaon), 2 teachers, 2 traditional healer (Datu) and 2 pemangku adat (Hato bangun).

2.3. Tools and Materials

The tools used in research include logbooks, camera, plant identification books, and stationery. The materials used are 70% alcohol, camphor, observation sheet, questionnaire sheet, hanging label, plastic sample and newspaper.

2.4. Procedure

The research method that been used are interview and field observation. The interview object was key informant and general respondents obtained from the results of snowball sampling. Ethnobotany data collection was done by in-depth interview semi-structures method with questionnaire. The questions include the species of medicinal plants, the part of plants that been used, where the plants been found, the intensity of use and what type of disease that been treat. The data obtained were then analyzed qualitatively.

3. RESULT AND DISCUSSION

3.1. Result

The knowledge about medicinal plants is obtained by Bulumario people from several sources, but it mostly comes hereditarily. At Bulumario Village, there is a traditional healer that is known as “Datu”. Datu is someone who is believed to be able to cure various types of diseases. Based on the interview, it was found that Datu used several types of plants to cure the diseases. His knowledge on the medication was obtained from his parents, supernatural revelation or dream. Based on the results of interviews with 45 respondents, there were 65 plant species of medicinal plants belonging to 60 genera and 37 families (Table 1) used by Subethnic Batak Angkola for treatment. These 65 plant species are able to cure several disease categories such as gastrointestinal disease, fever-cold-cough, influenza, tumor/cancer, throat-nose-ear, skin and genital, wound-bleeding, internal disease, obstetrics and gynecology.
Table 1. Medicinal plants used by the Angkola sub-ethnic in Bulu Mario Village, Sipirok, South Tapanuli

| Family              | Latin name                  | Local name | Plant part used | Location | Use                                                                 |
|---------------------|-----------------------------|------------|-----------------|----------|----------------------------------------------------------------------|
| Acoraceae           | Acoruscalamus               | Salimbatuk | Rhizoma         | Yard     | Cold, stomachache, fever, bruised, cough, sprained                   |
| Alliaceae           | Allium cepa                 | Bawangmerah| Bulb            | Farm     | Cold, massage oil                                                    |
|                     | Allium sativum              | Bawangputih| Bulb            | Farm     | Cold, influenza, massage oil                                        |
|                     | Allium Schoenoprasum        | Bawangbatakan| Bulb          | Farm     | Cold, wound, massage oil                                            |
| Amaryllidaceae      | Crinum asiaticum            | Oppuoppu   | Bulb            | Yard     | Sprained                                                            |
| Areca               | Areca catechu               | Pining     | Fruit           | Farm     | Wound, postpartum                                                   |
|                     | Arenga pinnata              | Bargot     | Nira            | Farm     | Constipation, diarrhea, ulcer, cold, fever, cough                   |
|                     | Cocos nucifera              | Harambir   | Stem            | Farm     | Postpartum (Mararang)                                               |
| Asteraceae          | Gynura procumbens           | Sambungnyaw a | Leaf         | Rice field | Constipation, diarrhea, itching and skin disease                   |
|                     | Blumea balsamifera          | Galinggang | Leaf            | Farm     | Itchy and skin disease                                              |
|                     | Chlorodium surinamense E    | Maredeka   | Leaf            | Farm     | Wound, stomachache                                                  |
| Balsaminaceae       | Impatiens balsamina         | Haturangga | Leaf and Stem   | Farm     | Bump, prevent pregnancy                                             |
| Begoniaceae         | Begonia isopteren           | Sanduduk   | Leaf            | Farm     | Wound                                                               |
| Campanulaceae       | Hippobromalangiflor A       | Pahtimata  | Leaf            | Yard     | Eyes drop                                                           |
| Casuarinaceae       | Casuarina sarumana          | Anturmanan | Stem/ran ting   | Hutan    | Postpartum (Mararang)                                               |
| Caricaceae          | Carica papaya               | Botik      | Leaf            | Farm     | Malaria, Postpartum                                                 |
| Compositae          | Crassocephalumcrepi Doides  | Haba-haba  | Leaf            | Yard     | Itchy, stomachache                                                  |
|                     | Galinsogparivilora          | Taya-tayababi | Leaf         | Yard     | Boil                                                                |
|                     | Mikaniascandens             | Siropakara | Leaf            | Yard     | Wound, asthma, stomachache                                          |
| Convolvulaceae      | Ipomeabatatas               | Saunggading | Leaf            | Farm     | Boil, fever                                                         |
| Cucurbitaceae       | Cucumisatius                | Acimun     | Fruit           | Farm     | Hypertension                                                        |
| Euphorbiaceae       | Heveabrasiliensis           | Haepa      | Latex           | Farm     | Anti-snake poison                                                   |
|                     | Jatropha curcas             | Jarak      | Leaf            | Farm     | Stomachache, cold                                                  |
|                     | Sapium sp.                  | Madanghunik| Bark            | Hutan    | Diarrhea                                                            |
|                     | Alerortes moluccanus        | Kemiri     | Fruit           | Farm     | Hair blackening                                                     |
| Irriidaceae         | Elleatherine bulboasa       | Bawangdayak| Bulb            | Farm     | Cholesterol and hypertension                                       |
| Lauraceae           | Cinamonum verum             | Kayumanis  | Latex           | Farm     | Wound and boil                                                     |
| Leguminosae         | Mimosa pudica               | Putrimalu  | Leaf            | Farm     | Wound and boil                                                     |
|                     | Spatholobus littoralis      | Bajakah    | Stem            | Hutan    | Cancer                                                              |
| Loranthaceae        | Loranthus spp.              | Sarindan   | Whole plant     | Farm     | Asthma and blood streamer                                           |
| Mackinlayaceae      | Centella asiatica           | Apapaga    | Leaf            | Yard     | Hypertension, wound                                                 |
| Malvaceae           | Sida acuta                  | Sibagure   | Whole plant     | Farm     | Rheumatic                                                           |
|                     | Hibiscus archeri            | Bungaraya  | Leaf            | Yard     | Fever                                                               |
| Meliaceae           | Lansium domesticum          | Laccat     | Bark            | Farm     | Stomachache and astma                                              |
| Moraceae            | Artocarpus elasticus        | Torop      | Stem            | Hutan    | Burn                                                                |
| Musaceae            | Musa paradisiaca            | Pisang raja| Fruit’s skin    | Farm     | Wound, smallpox and breast milk streamer                            |
| Myrtaceae           | Psidium guajava             | Jambuborsik| Leaf            | Farm     | Diarrhea                                                            |
| Nyssaceae           | Lithsea sp.                 | Kulim      | Stem            | Forest   | Postpartum (Mararang)                                               |
| Phyllanthaceae      | Saurkus androgynus          | Nasinasi    | Leaf            | Yard     | Breast milk streamer                                                |
| Family            | Species                      | Part   | Plant | Use                          |
|-------------------|------------------------------|--------|-------|------------------------------|
| Piperaceae        | Piper betle                  | Leaf   | Yard  | Eyes drop, toothache, postpartum |
| Poaceae           | Cymbopogon citratus         | Stem   | Farm  | Toothache                    |
|                   | Dactylis glomerata           | Leaf   | Yard  | Smallpox                     |
|                   | Oryza sativa                | Seed   | Rice field | Herpes                     |
|                   | Pennisetum purpurea M       | Leaf   | Yard  | Ulcer                        |
| Podocarpaceae     | Podocarpus nerifoli S       | Hotang | Fruit | Forest                       |
|                   | Labisia pumila              | Leaf   | Yard  | Accelerate baby’s birth      |
| Rubiaceae         | Uncaria gambir              | Gambir | Fruit and leaf | Farm                     |
|                   | Coffea robusta              | Kopi kampung | Seed | Farm                      |
|                   | Petungah spp.               | Kopi kopi | Stem | Hutan                      |
| Rutaceae          | Citrus aurantifolia         | Ute ruangd | Fruit | Yard                  |
|                   | Citrus lemon                | Ute ruangd | Fruit | Year                  |
|                   | Zanthoxylum acantho         | Sinyarnyar | Fruit | Hutan               |
|                   | Podium                      |        |       | Cold                        |
| Salicaceae        | Flacourtia rukam            | Rukam  | Fruit | Hutan                      |
|                   | Solanum lycopersicum       | Torungasom | Leaf | Farm                  |
|                   | Solanum torvum             | Rimbang | Fruit | Yard                  |
|                   | Capsicum anuum              | Lasiakara | Fruit | Farm                  |
|                   | Capsicum frutescens        | Lasiaklamot | Fruit | Farm                  |
|                   | Physalis angulata          | Pultak-pultak | Leaf | Yard                  |
|                   | Mahkotadewa                |        |       | Hernia                     |
|                   | Aquilaria malaccensis      |        |       | Hypertension                |
|                   | Gaharu                      |        |       | Internal disease            |
| Vitaceae          | Vitis gracilis             | Gagatanharim | Fruit | Forest               |
|                   | Zingiber officinalis       | Pege   | Rhizome | Farm               |

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From the 65 species of medicinal plants, the plant part had been used as medicine include leaf, stem, rhizome, bulb, latex, bark, flower, fruit, seed and whole plants. The uses of part plants depends on the need for treatment. The most widely used part of plants by the Bulumario people is leaf, which is 43% (Figure 1). Meanwhile medicinal plants are most commonly found in farms (Figure 2).

**Figure 1. Percentage of plant part used**

**Figure 2. Percentage of location of medicinal plants**

### 3.2. Discussion

However, as the civilization advances, the Bulumario people’s belief on traditional medication keeps degrading. 65 species of plants are believed to be able to cure various diseases, this number is less compared to the other Batak sub-ethnicities. BatakPhakpakSubthetic used 128 species of plants to treat 24 types of diseases [11], BatakSimalungunSubthetic used 92 species of medicinal plants [12]. BatakKaroSubthetic used 181 species 61 family as medicinal plants[1]. The small number of medicinal plants in bulumario caused of several factors such as the plants’ availability, diversity of people’s belief, culture, tradition and local wisdom. The previous research, that was conducted at Mandailing Natal Regency, which was dominated by BatakAngkola sub-ethnic, showed that there were only 31 species from 17 families of medicinal plants [7]. This further confirms that the BatakAngkolasubethnic indeed used a little medicinal plants. Bulumario people only use the plants as medicine in emergency or light diseases only, such as injured when farming, headache, stomachache, or colds. The reasons why people choose to use medicinal plants are because it is cheap, easy to find, and not dangerous to use [8].

The most common type of disease found in Bulumario village is wound. Because the majority of people in bulumario are farmers which mostly work with knives or machetes. So this causes the most commonly plant than been used by the people of bulumario is Siropakpara (*Mikaniascandens*). Almost all respondents mentioned this plant as a medicinal plant. Siropakpara is used by the people to heal wounds, such as wounds from knife or cleaver when farming. Some respondents also mentioned that siropakpara is able to cure stomachache. Siropakpara can be found in the yard, farm, or rice field’s edges. *Mikaniascandens* is well known of its benefit. In India or Bangladesh, its leaf is extracted to cure various stomach problems and to heal wounds and bruises. Phytochemical result showed that *Mikaniascandens* contained vitamin A, C, B, flavonoid, steroid, alkaloid, tannin and saponin[3].

Furthermore, colds also common disease in Bulumario village because of the extremely cold weather conditions especially in the morning and evening. To treat colds many medicinal plants are used by people in bulumario, but the most frequently mentioned is Salimbakut (*Acoruscalamus*). This plant usually be used to cure cold, cough, influenza and sprain. This plant also believed to be able to repel demons and cure possessed person. Salimbakut is commonly found on sewer. Salimbakut (*Acoruscalamus*) also as known as sweet flag has been long known as a medicinal plant since the last 2000 years. In Chinese medication, *Acoruscalamus* is recognized as a medicine for constipation and swelling. Traditional healers in India ‘Ayurvada’, use *Acoruscalamus* as a medicine for cold, asthma, sedative and cough; while in th West, it is used to cure digestive problems. *Acoruscalamus* known contains antimicrobial activity which inhibits the growth of bacteria, yeast or filamentous fungi, and it also contain antioxidant activity [2].

From the interview result, plant’s part that is most commonly used in bulumario village is wound. Because the majority of people in bulumario are farmers which mostly work with knives or machetes. Some respondents also mentioned that people to heal wounds, such as wounds from knife or cleaver when farming, headache, stomachache, or colds. The reasons why people choose to use medicinal plants are because it's easier to get whenever the community needs it [9]. Only few people of Bulumario who own plants at their yards, because the majority of them are farmers. They only plant for foods, medicine or livelihood plants in the farm. This makes the medicinal plants to be much more often found at the farm compared to the other places. Only a few medicinal plants are from another place such as the forest. One of them is *gagatanharimau* (*Vitisgracilis*). The people believe that *gagatanharimau* is a plant that is able to...
heal internal wound because this plant is a plant that is eaten by tigers if they are wounded or sick.

4. CONCLUSION

The Batak Angkola Subethnic in Bulumario Village is known to still preserve cultural values, one of which is the traditional use of medicinal plants. Proven from the presence of 65 plant species that are known to the public can treat various types of diseases.

REFERENCES

[1] Aththorick, T.A. & L. Berutu. 2018. Ethnobotanical study and phytochemical screening of medicinal plants on Karonese people from North Sumatra, Indonesia. Journal of physic. Conf. Series 1116 (2018) 052008

[2] Balakumbahan, R., K. Rajamani& K. Kumanan. 2010. Acoruscalamus: An overview. Journal of Medicinal Plants Research. 4(25): 2740-2745.

[3] Dey, P., S. Chandra, P. Chatterjee, S. Bhattacharya. 2011. Neuropharmacological properties of Mikantascandens (L.) Willd. Journal of Advanced Pharmaceutical Technology & Research. 2(4):255-259.

[4] Ersam, T., 2004, KeunggulanBiodiversitasHutanTropika Indonesia dalamMerekayasa Model MolekulkAlami, Seminar Nasional Kimia

[5] Farnsworth, N. R., O. Arkerele, A.S. Bingel, D. D. Soejarto& Z. Guo. 1985. Medical plants in therapy. Bulletin of the word health organization. 63 (6): 965-981.

[6] Kartawinata, K. 2010. Duabahdmengungkapkepkeyaan flora danekosistem Indonesia Dalam: SarwonoPrawirohardjo Memorial Lecture X. LIPI. 23 Agustus 2010. Jakarta.

[7] Marpaung, D.R.A.K. 2018. Tumbuhanobatdankearifanlocalmasyarakat di sekitakawasan TNBG DesaSibanggorJuluKabupatenMandailin Natal. JurnalBiosains. 4(2): 85-91.

[8] Muktiningsih, S.R., H.S. Muhammad, I.W. Harsana, M. Budhi&P. Panjaitan. 2001. Review tanamanobat yang digunakanolehpengobattraditional di Sumatera Utara, Sumatera Selatan, Bali dan Sulawesi Selatan. Media LitbangKesehatan. 11(4): 25-36.

[9] Nurhaida, F.H. Usman& G.E. Tavita. 2015. Ststudietnobotanitumbuhanobat di dusunKelampukKecamatan Tanah Pinoh Barat Kabupaten Melawi. JurnalHutan Lestari. 3(4): 526-537

[10] Purwadi, E. Kriswiyanti, Aliffiati, G.A.S. Wahyuni& D.P. Ningsih. 2015. Ekspolorasipengetahuanlokaletnomedisindantumbuhanobataterbasiskomunitas di Indonesia. Kementerian Kesehatan RI Badan Peneliti访谈an Pengembangan Kesehatan.

[11] Silalahi, M., Nisyawati, E.B. Walujo&W. Mustaqin. 2018. EtnomedisintumbuhanobatolehSubetnisBatakPhakpak di DesaSurungMersada, KabupatenPhakpak Barat, Sumatera Utara. JurnalIlmuDasar. 19(2): 77—92.

[12] Simanjuntak, H.A. 2016. Etobotanitumbuhanobat di masyarakatEtnisSimalungunKabupatenSimalungunProvi nsi Sumatera Utara. BioLink. 3(1): 75-80.

[13] Supriatna, J. 2008. Melestarikanalam Indonesia. Jakarta: YayasanObor Indonesia.

[14] Simbolon, H. 1994. Ethnobotany of people around the DolokSibuaubial Nature Reserve Area North Sumatera Indonesia. Tropics. 4(1): 69-78

[15] Winara, A. & A.S. Mukhtar. 2016. Pemanfaatantumbuhan obat oleh Suku Kanum di Taman Nasional Wasur Papua. Jurnal Penelitian Hutan dan Konservasi Alam.13(1): 57-72.