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The Diversity Species of Medicinal Plants in The Martelu Purba Nature Reserve, North Sumatra

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Abstract. Indonesia was known as a country that has high biodiversity, some of them are various types of medicinal plants. Since the first, Indonesian people have used medicinal plants in traditional medicine. This research was conducted in the Martelu Purba Nature Reserve (MPNR), Purba District, Simalungun Regency, North Sumatra. MPNR is a nature reserve consisting of high biodiversity, some of them are medicinal plants. However, the information on medicinal plants in this area is rarely documented even though they have a meaningful contribution as traditional medical treatments for indigenous communities. This study aims to identify all plant species found in the MPNR. This method of research was carried out by exploring key informants, namely the manager of the nature reserve and the local community. Determination of the number of respondents is done by the snowball sampling method. The results showed that there were 44 species of medicinal plants found in the MPNR consisting of 33 families, where the most families were from the *Arecaceae* family, which was 17.24%. Based on habitus, medicinal plants found in MPNR consist of 20 tree species (45.45%), 13 herb species (29.54%), 5 palm species (11.36%), 4 shrub species (9.09 %), and 2 species from epiphytes (4,54%). Based on the intended use of medicinal plants used as fever, cough, diarrhea, diabetes, wounds, asthma, malaria, and others. Based on the part of the plant that has been used, 19 species from leaves (42.22%), 7 species from fruit/seed (15.90%), 6 species from all plant parts (13.63%), 5 species from bark (11.36%), 2 species from roots (4.54%), 1 species from resin (9.09%), 1 species from the flower (9.09%), 1 species from bark and seeds (9.09%), 1 species from wood (9 .09%), and 1 species from bark and leaves (9.09%). Medicinal plant species found in the MPNR must be conserved to maintain their sustainability and can be used sustainably.

Keyword: Diversity, Martelu Purba, Medicinal Plant, Nature Reserve, Utilization

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1 Introduction

Indonesia is one of the countries with the highest biodiversity in the world Indonesia is a country that has high biodiversity, both flora and fauna. Biodiversity in the form of flora and

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fauna, one of which is in the MPNR. MPNR is a nature reserve that has a fairly high diversity of plant species, one of which is medicinal plants. Many plants have not been identified optimally. It is important to research medicinal plants in the MPNR to record the potential of these medicinal plant species.

Medicinal plants have been known to many people and have been used by many Indonesians since ancient times until now. Many medicinal plants are obtained from the wild, for example in the forest. According to [1], medicinal plants are still widely used in traditional Indonesian medicines. This traditional Indonesian medicines are still widely used today, both in urban and rural areas and also among all social classes. Some areas that have local wisdom about the use of medicinal plants from various tribes need to be documented.

The active compound in most medicinal plants has a direct therapeutic effect or an indirect effect. Inside the body of this plant, certain materials are produced and stored referred to as the active compound (substance), which has physiological effects on living organisms medicinal plants are used for treatment because it has certain properties, including synergistic action. [2]. Traditional medicinal practices in Asia have existed from time immemorial; classical examples are Ayurveda in Himalaya, Jamu in Indonesia, Traditional Chinese Medicine in China, Sowa Rigpa in Bhutan, Kampo in Japan, Thai medicine in Thailand, and Herbal Medicine in Bangladesh [3]. In some areas, at this time the use of traditional plants has begun to be abandoned and depends on chemical drugs, but the people around the MPNR continue to use plants for health needs. Therefore, it is important to document the types of medicinal plants around the MPNR as data input for science. The purpose of this study was to identify the types of medicinal plants found in the MPNR, to find out the benefit of medicinal plant species, to know the parts of the plants used, and to know how to process these medicinal plants.

2 Research Method

This research was conducted in the MPNR, North Sumatera, Indonesia in 2018 (Figure 1). The research method was carried out by direct plants of medicinal plants in the forest guided by the staff of the MPNR, and interviews with local communities on the species of plants used as medicine by the community. The research method used is snowball sampling [4] by interviewing key informants in the community. Species identification was carried out by recording all species found in the MPNR [5,6,7]. Interviews were conducted to determine the types of medicinal plants used, utilization, parts used, habitus, and processing of medicinal plants. Identifying plants at the observation site is carried out directly in the field, scientific references with the help of finding species of local guides.

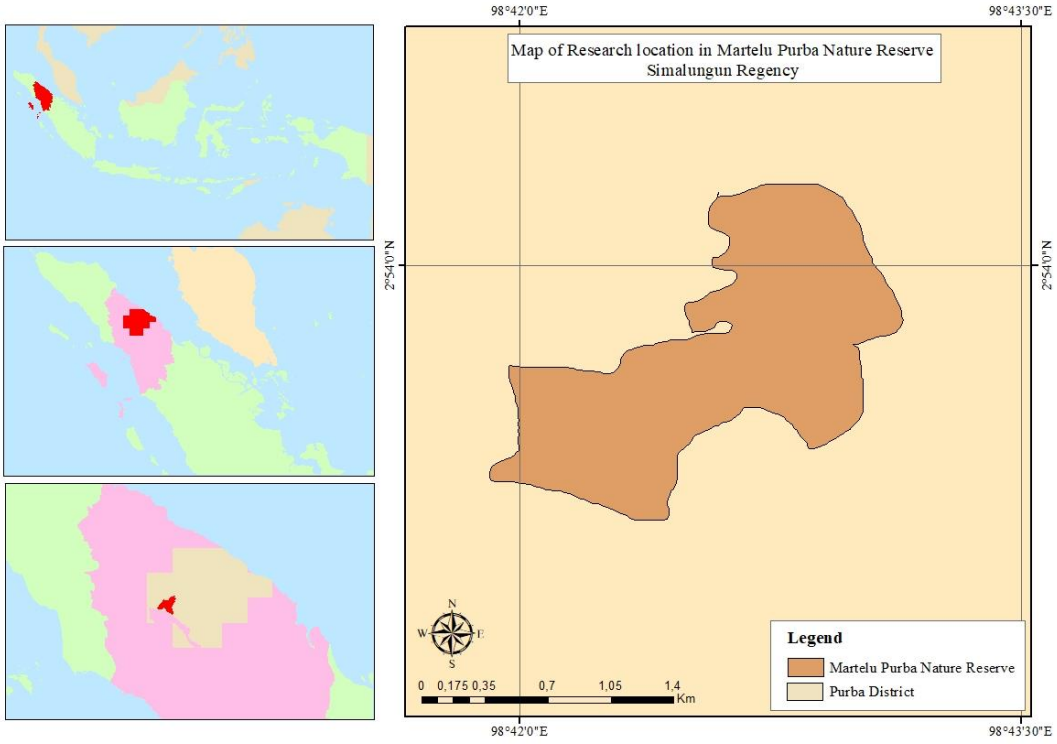

Figure 1. Map of research location

3. Results and Discussion

The results showed that there were 44 types of medicinal plants found in the MPNR consisting of 33 families, where the most families were from the *Arecaceae* family, which was 17.24%. Based on habitus, medicinal plants found in MPNR consist of 20 tree species (45.45%), 13 herb species (29.54%), 5 palm species (11.36%), 4 shrub species (9.09 %), and 2 species from epiphytes (4,54%). Based on the intended use of medicinal plants used as fever, cough, diarrhea, diabetes, wounds, asthma, malaria, and others.

Based on [8] from Batu Katak village, The Langkat Regency community suggested that there were 34 species of medicinal plants used by the community as traditional medicine. According to [9], based on the results of research in the Western Himalayan Palas Valley, Indus Kohistan, Pakistan there are 65 medicinal plant species of 57 genera belonging to 40 families. According to [10], revealed 134 species of medicinal plants from 53 families were found in eight districts in West Kalimantan. Eleven plant species have been reported to have a species UV. *Zingiber officinale* is the species most often used to treat bone injuries [10]. Compared to the research conducted by [11], 174 types of medicinal plants are classified into 45 different families, including 35 dicots and 9 monocots. The plant is mainly distributed in the parts of the Varzob and Ramit gorges, which is located near the capital city of the Republic of Tajikistan – Dushanbe city and is the natural buffer zone.

Based on the part of a plant that has been used in MPNR, 19 species from leaves (42.22%), 7 species from fruit/seed (15.90%), 6 species from all plant parts (13.63%), 5 species from bark (11.36%), 2 species from roots (4.54%), 1 species from resin (9.09%), 1 species from the flower (9.09%), 1 species from bark and seeds (9.09%), 1 species from wood (9 .09%), and 1 species from bark and leaves (9.09%). Based on [12] among 65 species, the main parts were leaves (15) followed by fruits (12), stem (6), and berries (1), used as medicine. While 13 rhizome plant species are medicinally important, 4 from the root, 4 from seed, 4 from bark, and 1 each from resin.

Table 1 Diversity type, utilization, part of used, habitus, processing method medicinal plant in the MPNR, North Sumatera Indonesia

No	Local name	Scientifict name	Family	Utilization	Part of used	Habitus	Processing method
1	Palem / demban	*Cyrtostachys lakka*	Arecaceae	Diarrhea	Fruit	Palm	Eating with betel
2	Pinang hutan	*Pinanga kuhlii*	Arecaceae	Dysentery and Injure	Root	Palm	Boiled
3	Aren	*Arenga pinnata*	Arecaceae	Inflammotory, Sprue, for breastfeeding mothers	Flower	Palm	Drink and eat directly
4	Salak	*Salacca zalacca*	Arecaceae	Bioethanol, Diabetes	Fruit	Palm	Boiled skin
5	Rotan	*Calamus axillaris*	Arecaceae	Gonorrhea Medicine	Fruit	Palm	Blend and drink
6	Daun kepala tupai	*Drynario aquercifolia*	Polypodiaceae	Anti bacterial TBC, Fever	All parts of the plant	Herb	Undergrow th
7	Paku sisik naga	*Pyrrosia piloselloides*	Polypodiaceae	Cancer Cure, Thrush	All parts of the plant	Epiphyte s	Mashed and then boiled
8	Sabal	*Cinnamomum inners*	Lauraceae	anti-bacteria	Leaf	Tree	Boiled and drink
9	Pulutan	*Urena lobata*	Malvacea	Injure, Fever	Leaf	Herb	Boil and rub on the wound
10	Balangkoras	*Pterospermum acerifolium*	Malvaceae	Antiseptic	Leaf	Shrub	mashed
11	Rajama-tan	*Leen angulate*	Malvaceae	Injure, Fever	Bark	Tree	Mashed and then boiled
12	Longa begu	*Clibadium surinamense*	Asteraceae	Injure, Diarrhea	Leaf	Herb	Boil and rub on the wound
13	Sambung nyawa	*Gynura procumbens*	Asteraceae	Diabetes Medicine	All parts of the plant	Herb	Boiled and drink
14	-	Mussaenda sp	Rubiaceae	Fever, Cough	Leaf	Shurb	Be drunk
15	Kopi	*Coffea Arabica*	Rubiaceae	Antidiabetic	Fruit	Shrub	Brewed
16	Nangka	*Artocarpus integer*	Moraceae	Malaria	Bark, seed	Tree	Eat directly
17	Beringin	*Ficus benjamina*	Moraceae	As medicinal Plant	Leaf	Tree	Boiled and drink
18	Simartolu	*Schima sp.*	Theaceae	Natural Dyes	Bark	Tree	Boiled and drink
19	Modang	*Litsea sp*	Lauraceae	Diarrhea, asthma, demam	Bark and leaf	Tree	Dried and brewed
20	Kayu manis	*Cinnamomum verum*	Lauraceae	Diabetes	Bark	Tree	Dried and brewed

No	Local name	Scientifict name	Family	Utilization	Part of used	Habitus	Processing method
21	Sitarak	*Macaranga tanarius*	Euphorbia-ceae	Sore Throat	Leaf	Herb	Boil and drink
22	Sikam	*Bischofia javanica*	Euphorbia-ceae	Injure, Diarrhea, and Stomach Acid.	Bark	Tree	Dried and brewed and the drink
23	Senduduk	*Melastoma candidum*	Melastomatacea e	Diarrhea	Leaf	Herb	Boil and drink
24	Daun bungkus	*Smilax rotundifolia*	Smilacaceae	Overcoming Barren	All parts of the plant	Herb	Be drink
25	Sungkit	*Curculigo latifolia*	Hipoksida-ceae	Fever	Leaf	Herb	Boiled and drink
26	Jati	*Tectona grandis*	Lamiaceae	Asthma, wound	Leaf	Tree	Boiled and drink
27	Rau	*Dracontome-lum* sp	Anacardia-ceae	Diarrhea	Bark	Tree	Pounded and Boiled
28	Petai cina	*Leucaena Leucocephala*	Fabaceae	Worm medicine, Skin medicine	Fruit	Tree	Eat directly
29	Hoting bunga	*Quercus sp.*	Fagaceae	diabetes, toothache	Fruit	Tree	Boiled and drink
30	Hanawe	*Eugenia longiflora*	Myrtaceae	anti-inflammato-ry	Leaf	Tree	Boiled and drink
31	Arang/ gerung-gang	*Cratoxylon formosum*	Hyperica-ceae	Diarrhea	Leaf	Tree	Boiled and drink
32	Makada-mia	*Macadamia hildebrandii*	Proteaceae	Antioksidaan	Fruit	Tree	Boiled and drink
33	Mayang	*Madhuca cuneata*	Sapotaceae	antioksidan	Leaf	Tree	Boiled and drink
34	Dap-Dap	*Fagara rhetsa*	Rutaceae	antiseptic	Wood	Tree	Boiled and drink
35	Hulasar	*Altingia excelsa*	Altingiaceae	Cough	Leaf	Tree	Boiled and eat directly
36	Keme-nyan	*Styrax benzoin*	Styracaceae	Traditional medicine	Resin	Tree	Burned
37	Kecom-brang	*Etlingera elatior*	Zingibera-ceae	Wound medicine	All parts of the plant	Herb	Boiled and drink
38	Pakis Jantan	*Dryopteris felix*	Dryopterida-ceae	Nosebleeds, bleeding	Leaf	Herb	Boiled and drink
39	Pandan duri	*Pandanus tecrorius*	Pandanaceae	Tuberculosis, boils, antibacterial	Root	Herb	Boiled and drink
40	Pakis	*Pteridium aquilinum*	Dennstaedtiacea e	Antioksidan	Leaf	Herb	Boiled and drink
41	-	*Davalia sp*	Davalliaceae	Antioksidan	Leaf	Herb	Boiled and drink
42	Sungkit	*Curculigo latifolia*	Hypoxidaceae	Kidney disease	All parts of the plant	Herb	Boiled and drink
43	Paku sarang burung	*Aspleniunm nidus*	Aspleniaceae	Swelling medicine	Leaf	Epiphyte s	Boiled and drink
44	Simar leu-leu	*Vaccinium varingiae-folium*	Ericaceae	Fever	Leaf	Shurb	Boil and eat directly

Based on the results of research that the use of medicinal plants, among others, are boiled and then drunk, mashed and then affixed to the sick, and can also be consumed directly. Medicinal plants are plants in which one or all parts of the plant contain active substances that are beneficial for health that can be used as a cure for diseases. The plant parts in question are

leaves, fruit, flowers, roots, rhizomes, stems (skin), and sap (resin). According to [7] people who consume it directly orally use it indirectly by rubbing and pasting.

According to [12], explained in general, the raw materials for traditional medicines are in the form of fresh plant materials, and the handling is only by pounding, brewing, burning, or boiling. The use of medicinal plants as medicine can be drunk, taped, and inhaled. So using can fulfill the working concept of cell receptors in receiving chemical compounds or stimuli [12].

3 Conclussions

This study concluded there were 44 medicinal plants species consisting of 33 families, consisting of 20 trees, (45.45%), 13 herb species (29.54%), 5 palm species (11.36%), 4 shrub species (9.09 %), and 2 species from epiphytes (4,54%). The majority of medicinal plants were dominated by trees. The utilization of medicinal plants was used for fever, cough, diarrhea, diabetes, wounds, asthma, malaria, and others.

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