

CHAPTER I

INTRODUCTION

1.1 Background

Indonesia is a country with high biodiversity and culture of traditional medicine preserved for generations. The modernization of culture can cause the loss of traditional knowledge possessed by the community. (Susanti, 2017).

The community still uses traditional medicine, and until now, many of them have scientifically proven to have medicinal properties. The types of medicinal plants are not known with certainty, so it is necessary to thoroughly document the use of plants as raw materials for treatment. Supported by research by Zuhud (2011), people in Indonesia have long carried out plants as medicinal ingredients. With the ethnic diversity that exists, the use of medicine is also increasingly diverse.

The history of traditional medicine that has developed into the nation's cultural heritage and the global issue of "back to nature" can increase the market for herbal products. Initially, the use of a plant species was caused by a system of local knowledge (indigenous knowledge) about plants in a traditional community group. This knowledge is formed as a result of trial and error and the development of human culture, which can then create local wisdom in these community groups (Falah, 2013).

Since ancient times, the Humbang Hasundutan community with the Toba Batak ethnicity has known various traditional medicines and various health benefits. These traditional medicines are obtained directly from nature and processed based on the experience and knowledge possessed by the community. This traditional knowledge was obtained from

the ancestors of the Toba Batak people who had known traditional medicine long before the community knew medical treatment.

Data on (Central Bureau of Statistics Humbang Hasundutan, 2018) is known to consist of 10 sub-districts, namely Dolok Sanggul, Baktiraja, Lintong Nihuta, Onan Ganjang, Pakkat, Paranginan, Parlilitan, Pollung, Sijamapolang, and Tarabittang. The majority of the population of Humbang Hasundutan are Batak ethnic farmers (Silalahi, 2014). Pollung Subdistrict consists of 13 villages, namely Parsingguran I Village, Huta Paung Village, Pollung Village, Huta Julu Village, Ria-Ria Village, Parsingguran II Village, Pancur Batu Village, Aek Nauli Village I, Aek Nauli II Village, Pandumaan Village, Huta Village North Paung, Sipituhuta Village and Pardomuan Village. The population of Sipituhuta Village is 2180 people. Sipituhuta village has 3 hamlets, namely Hamlet I: Marade, Hamlet II: Dongdong, and Hamlet III: Sipituhuta, totalling 466 households (heads of families).

The high potential for the presence of medicinal plants in Sipituhuta Village, especially in Pollung Subdistrict, has not been recorded. Therefore, for answering the needs for information related to data on medicinal plants and traditional ingredients used by the Toba Batak ethnic group in North Sumatra, it is necessary to conduct research on the Utilization of Medicinal Plants by the Community of Sipituhuta Village, Pollung Subdistrict, Humbang Hasundutan Regency.

1.2 Problem Formulation

Based on the above background, the formulation of the problem in this study is what plant species have the potential as drugs in Sipituhuta Village and how the people of Sipituhuta Village, Pollung Subdistrict, Humbang Hasundutan Regency use medicinal plants.

1.3 Research Objectives

The purpose of this research was to determine the potential medicinal plant species in Sipituhuta Village and to determine the utilization of medicinal plants by the people of Sipituhuta Village, Pollung Subdistrict, Humbang Hasundutan Regency.

1.4 Research Benefits

The benefit of this research is to provide knowledge to the people of Sipituhuta Village, Pollung Subdistrict about the benefits of plants as traditional medicine. The results of the research can be used as Biology learning on Biology material of Medicinal Plants and can be used as a reference or basic data for further research.

CHAPTER II

LITERATURE REVIEW

2.1 Medicinal Plants

Medicinal plants are plants that have medicinal properties and are used as medicine in healing and preventing disease. The definition of medicinal efficacious contains active substances that function to treat certain diseases or if they do not contain certain active substances but contain a resultant effect/synergy of various substances that function to cure (Rahmawati, 2002). In accordance with the contents of the book (KBBI, 2016) that medicinal plants are plants that are used to reduce, eliminate disease, or cure someone from disease. According to Nursiyah (2013), medicinal plants are all types of medicinal plants that known or believed to have medicinal properties which are grouped into, traditional medicinal plants, namely types of medicinal plants that are known or accepted by the public to have medicinal properties and have been used as raw materials for traditional medicines. Modern medicinal plants are plant species that have been scientifically proven to contain compounds or bioactive ingredients which had medicinal properties and their use could be medically justified. Potential medicinal plants are types of medicinal plants that are assumed to contain compounds or active ingredients that own medicinal properties but have not been scientifically proven or their use as traditional medicines are difficult to trace.

Medicinal plants have been used by the Indonesian people for centuries in the form of herbal medicine to solve various health problems to be dealt with and they are the cultural wealth of the Indonesian nation that needed to be maintained, noticed and preserved. The development of this natural medicine deserves greater attention not only due to its open

development potential but also the market demand for raw materials for these traditional medicines continues to increase for both domestic and international needs. The Indonesian Ministry of Health defines Indonesian medicinal plants as stated in the Decree of the Minister of Health No. 149/SK/Menkes/IV/2015, namely: Medicinal plants are plants or parts of plants that are used as ingredients for traditional medicines or herbs, medicinal plants are plants or parts of plants that are used as starting materials for medicinal raw materials (precursors), then Medicinal plants is a plant or plant parts are extracted and the plant extract is used as medicine. In improving the health problems of medicinal plants, it is also beneficial for the community because people will not feel the side effects of the herbal ingredients they make, it is different if people depend on synthetic drugs in addition to be expensive, the risk of side effects for long-term health is also very worrying. This is relevant to the results of research (Sari, 2015) that the benefits of family medicinal plants are not only to increase family income, but also to preserve traditions, save medical expenses and utilize unproductive land.

2.2 Utilization of Medicinal Plants

2.2.1 Medication

Medicine in the field of medical science according to Agoes (2013) says that traditional medicine is a treatment that uses traditional medicines that have a community cultural background, which can be classified as appropriate technology because the materials used are located around the community itself so that it is easy to obtain, inexpensive. and easy to use without requiring expensive equipment to prepare. However, at this time there are still many people who choose an alternative or traditional medicine because the use of traditional medicine is generally considered safer than the use of modern medicine. This is because traditional medicine has relatively fewer side effects than modern medicine. Based on the

weaknesses of modern medicine, the current concept of returning to the use of natural products or back to nature in the health sector is increasing. The medical tradition of a society cannot be separated from the connection of local culture. Each region has a type of alternative medicine that has its own uniqueness and characteristics, because traditional medicine can be obtained from the results of learning and experience as a cultural heritage that is passed down from one generation to the next. The Indonesian people from the past until now, even though they are familiar with medicines are processed from modern laboratories, still believe that traditional medicine recipes inherited from their ancestors are still efficacious, effective and inexpensive to maintain excellent health (Agoes, 2013). The processing method is still straightforward, only based on daily habits and experiences that had been passed down from generation to generation from their ancestors (Efremila et al., 2015).

2.2.2 Treatment

The definition of treatment is a process related to the prevention, treatment and management of disease as well as the process of mental, physical and spiritual stabilization through services offered by organizations, institutions and professional medical units (<http://id.wikipedia.org/wiki/perawatan>). Self-care is a condition in which a person experiences weakness in the ability to perform or complete self-care activities independently such as bathing (hygiene), dressing/decoration, eating and urinating/ defecating (toileting) (Fitria, 2014).

2.2.3 Reflection

Reflection is a way of curing disease through the central point of the nerves concerned (related) with certain organs of the body. In other words, it is the healing of a disease through nerve refresher to facilitate blood circulation (Ahmad, 2016). Often in life, various life problems could press both psychologically and physically. In a certain period of time, this

situation makes a person become stressed or depressed so that which affects physical health. Circulation of body organs will be blocked. By doing reflexology, the bad effects of stress on physical conditions can be returned to normal. In turn, the stress due to being depressed slowly decreases and disappears. There are relatively many diseases that can be overcome through reflection techniques, from minor ailments (such as aches and dizziness) to serious illnesses (such as cancer, kidney disorders, stroke, and heart disease). This massage method not only overcomes various diseases, but is also able to prevent as early as possible such diseases that may attack. Through reflexology treatment, the body's resistance can be increased so that the body becomes more fit and stamina increases. This happens because the plants used can increase the body's energy. Mechanically, the nerves and muscles of the body become trained, so that the body becomes fitter and can ward off disease. Often in life, various life problems suppress both psychologically and physically. In a certain period of time, this situation makes a person become stressed or depressed so that which affects physical health. Circulation of body organs will be blocked. By doing reflexology, the bad effects of stress on physical conditions can be returned to normal. In turn, the stress due to be depressed slowly decreases and disappears (Ahmad, 2016)

2.2.4 Health

Health is one of the basic needs for the sustainability of human life in addition to other needs such as food, shelter and education, because only in a healthy state, humans can live, grow and develop, work and apply ideas they have well. To obtain optimal health, the community recognizes two types of treatment, namely, modern (medical) medicine and alternative or traditional medicine. Medical treatment is one type of medication that uses modern tools, methods, and materials made from chemicals that are included in the standard of modern medical treatment. While alternative medicine is a health effort, which rooted in

tradition and uses natural ingredients whose medication system is very different from the medication system in the field of medical science (Wakidi, 2013).

Health has now been seen as very important for most people along with the development of civilization which also gave birth to many new diseases. According to Wakidi (2013), the manifestation of great concern for health is seen in the daily lives of people who behave in a healthy manner, starting from the residential environment and a clean and healthy way of life as well as adequate food with high nutritional value. In addition, people also know what to do when they are sick and how to recover soon. To meet the latest public health needs, then the needs for health facilities including drugs must be sufficient, both in type and quantity, safe to use and have quality that meets the requirements and spread evenly so that it can be reached by the wider community. However, not all people in the community get all the health facilities provided by the government and the private sector, including drugs.

2.3 Utilization of Medicinal Plants Based on the Part Used

According to Kurdi (2011), knowledge about medicinal plants has long been owned by our ancestors and until now many have been scientifically proven. The use of Indonesian medicinal plants will continue to increase, recalling the strong connection between the Indonesian people and the cultural tradition of using herbal medicine.

Medicinal plants are plants in which one, some or all of the plant parts contain active substances or ingredients that are beneficial for health.

Parts of the plant in question consists of: The skin (cortex) is the outermost part of higher woody plants. It is bounded on the outside by the epidermis and on the inside by the endodermis. The cortex is composed of undifferentiated supporting tissue and constitutes the ground tissue. Leaf (folium) is one of the plant organs that grows from twigs, usually green

(contains chlorophyll) and mainly functions as a catcher of energy from sunlight for photosynthesis. Leaves are the most widely used plant parts as raw materials for traditional medicinal herbs and essential oils. Flowers (flos) are modifications of bud (stems and leaves) whose shape, colour, and arrangement are adjusted to the interests of the plant (Rahardi, 2016).

Flowers are a means of generative reproduction in plants. The flower used as medicine can be in the form of single interest or compound interest. The root (radix) is the base of the plant on the stem located underground and grows towards the centre of the earth. Roots used as medicine can be in the form of roots derived from plant species which generally have soft trunks and have a high-water content. Tuber (bulbs) are enlarged roots and have a function to store certain substances from plants. The shape of the tuber size varies depending on the type of plant. Tubers used as medicine can be in the form of pieces or chopped tubers, root tubers, or stem tubers. Rhizomes are stems that grow underground which then grow buds that become saplings and then grow together in large clumps to grow tubers. Rhizome used as medicine can be in the form of pieces or slices of rhizome.

Fruit (fructus) is an organ in flowering plants which is a further development of the ovary. Fruit is usually covering and protecting a seed. The fruit used as medicine can be in the form of soft fruit and some hard fruit. Soft fruit will produce simplicial with very different shapes and colours, especially when the fruit is still fresh. Fruit skin (pericardium) is the outermost layer of the fruit that can be peeled, as well as fruit simplicial, some fruit peel simplicial are soft, hard and some are tenacious with various shapes. Seeds (semen) ovules are produced from ripe flowering plants. Seeds can be protected by other organs (fruit in Angiosperms or Magnoliophyta) or unprotected (in Gymnosperms). Seeds that are used as medicine can be in

the form of seeds that have been ripened so that they are generally very hard. The shape and size of seed simplicial also vary depending on the plant species. (Rahardi, 2016)

2.4 Utilization of Medicinal Plants by Habitus

Medicinal plants consist of several kinds of habitus. In botany, the use of habitus is used to describe a general appearance or architecture of a plant. According to Tjitrosoepomo (2015) the habitus of plant species can be divided into several groups, namely: Herbs are non-woody plants with soft and watery stems, Trees are large tall plants, woody stems and branching away from the ground, Bushes are plants not quite large, woody stems, branching near the surface of the ground or even in the soil, Shrubs are woody plants not too large and branched close to the surface, usually less than 5-6 meters, Liana is a woody plant with stems sticking out / climbing on other plants. The species most commonly found to obtain medicinal plant species are herbaceous species which have soft stems because they do not in the form of wood, have a height of 2 meters, including grasses, vegetables such as spinach and katuk as well as flowering plants with red or white coloration. Herbal plants have been widely used as medicine to treat various diseases (Wiwinda, 2011). Identification of herbaceous plants and their properties is carried out by means of literature (identification keys) or literature studies (Makalalag, 2014). Some herbaceous plants have bitter substances such as brotowali (*Tinospora crispa*) and also aromatic herbs such as betel (*Piper beetle*) are medicinal herbs (Kurdi, 2011).

Examples of familiar herbs that have medicinal properties are cat's whiskers (*Orthosipon aristatus*), ceplukan (*Physalis angulata*), gotu kola (*Centella asiatica*), and babadotan (*Ageratum conyzoides*). Each herb contains substances that had potential as drugs,

included anti-bacterial, anti-inflammatory, analgesic, anti-hyperglycaemic, anti-viral, and able to neutralize toxins (Aspan et al, 2018).

2.5 Utilization of Medicinal Plants Based on Processing

There are various ways of processing medicinal plants by the community, including boiling, pounding, squeezing and without being processed. According to (Dewi, 2017) mostly use is done by cooking and a few is done by pressing. In the treatment process, the villagers process the plant by boiling it and then taking the juice from the plant. In general, the reliable composition of this medication uses more than one type of plant (single). In everyday life, the types of plants that are used as ingredients for traditional medicine in simple use, it can be done by means, the parts of the plants that are used simply by boiling, kneading or burning. The parts of plant used are leaves, bark, stems, roots and fruit (Dewi, 2017).

2.6 Medicinal Plants by Use Method

There are various ways of using medicinal plants by the community, including drinking, sticking, smearing, gargling and eating. The method of use widely used is by drinking it, almost all medicinal plants found in its use are boiled, but some are not. The least use method is by gargling. Local people believe that by drinking it, the disease they feel will recover and have a very fast reaction compared to be smeared, stuck or others (Dewi, 2017).

2.7 Use of Medicinal Plants

Based on Dewi's research (2017). Medication using plants by the local community can be classified into two types, namely internal (physiological) and external (physical) diseases. Types of disease with using external medication consists of itching, skin diseases, wounds, backache, bruises, insect bites, and venomous animals, tendons, cataracts, low vision, fever in infants, acne and ulcers. Meanwhile, the types of diseases that use internal medicine include ulcers, energy boosters, appetite enhancers, menstrual stimulants, abdominal pain, internal heartburn, tightness, hepatitis, tonsils, slimming, facilitating childbirth, urinating, coughing in infants, heart paralysis, anaemia. , urinary stones or diabetes, high blood pressure, vomiting blood, toothache, typhoid, fever, eye pain, headache, malaria, heart, lung, fever, thrush, rheumatism, cough, cleaning dirty blood after giving birth, diarrhoea, vaginal discharge and cysts. To cure diseases in the mahkota dewa's plant (*Phalaris macrocarpada*) can be used to treat hypertension, areca nut (*Areca cathecu*) to cure stomach ulcers, sangki kambing (*Paraxelis clematidea*) to cure stomach pain. While the medication of external diseases such as healing wounds and fractures is found in aloe vera (*Aloe sp.*) and lidah mertua (*Sansevieria trifasciata prai*). While the method of medication for internal diseases in general, namely parts of the plant is boiled, while for external diseases, the parts of the plant is attached or rubbed. Medication efforts with natural ingredients are growing rapidly. The development of the use of medicinal plants is very prospective in terms of various supporting factors, such as the availability of rich and diverse biological resources in Indonesia. The history of traditional medicine that has developed become the nation's cultural heritage, as well as the global issue of "back to nature" which increases the market for herbal products (Falah, 2013).

Abdiyani (2018) reveals that the advantages of treatment using traditional medicinal plant ingredients were generally considered safer than the use of modern medicine. This is because traditional medicine has relatively fewer side effects than modern medicine. The use

of natural ingredients as traditional medicine in Pollung Subdistrict has been carried out by traditional healers to cure various diseases.

2.8 Characteristics of medicinal plants

According to Izzuddin and Azrianingsih (2015). Most medicinal plants have a distinctive aroma due to the presence of essential oils, while the high content of alkaloids and the content of tannin compounds makes plants containing these compounds have an astringent and bitter taste. In addition, the roots of plants contain a lot of water and fibre. Medicinal plants or biopharmaceuticals are defined as types of plants in partial, whole plant and or plant exudates are used as drugs, ingredients or medicinal ingredients (Chasanah, 2010). Plant exudates are the contents of cells that spontaneously come out of the plant or in some way intentionally removed from the cells. Plant exudates can be in the form of substances or other vegetable materials which were in a certain way separated/isolated from the plant. In general, it can be seen that not less than 82% of the total medicinal plant species lived in lowland tropical forest ecosystems at an altitude below 1000 meters above sea level. Currently, lowland forest ecosystems are the mostly damaged and extinct forest areas due to various wood exploitation activities by human (Arizona, 2011).

CHAPTER III

RESEARCH METHODS

3.1 Time and Place of Research

This research will be carried out from October to December 2018, in Sipituhuta Village, Pollung Subdistrict, Humbang Hasundutan Regency which consists of III Hamlets, namely: Hamlet I Marade, Hamlet II Dong-dong, and Hamlet III Sipituhuta.

3.2 Materials and Tools

The tools used are a map of the research location (list of attachments), stationery, and a camera for documentation. The materials used in this study are plant species that have the potential as medicine, a list of questions or questionnaires for selected respondents, an inventory of Indonesian medicinal plants. Sri and Johnny (1991) for the identification of medicinal plant species and writing instruments to record the data obtained in the field.

3.3 Research Method

The method used in this research is descriptive qualitative and quantitative methods, data collection techniques with structured interview techniques with the aim of collecting data with 3 repetitions with the same person but with different time intervals, namely for 1 week.

The selection of respondents is done by purposive sampling method, which aims to take samples, namely informants who were chosen deliberately by the researcher. The total number of informants interviewed in the three hamlets were 9 people, consisting of 4 men and 5 women, where most of the selected informants ranged in age from 40 to 65 years. Each hamlet consists of 3 informants and the selected informants are people considered to mostly use plants, such as shamans or healers, traditional leaders, and community leaders who often use medicinal plants.

3.4 Research Procedure

1. Initial Survey

The survey is conducted to determine the respondents to be interviewed, to find out the location of the research and to find out the community's initial information about the use of medicinal plants in Sipituhuta Village in III Hamlet, namely Marade, Dong-Dong, Dan Sipituhuta Hamlets, Pollung Subdistrict, Humbang Hasundutan Regency.

2. Research Implementation

a. Data collection technique

Data is collected by means of structured interviews regarding the types of medicinal plants and the use of drugs by the people of Sipituhuta Village, Pollung Subdistrict, Humbang Hasundutan Regency. (List of interviews attached).

b. Sample documentation

Plants that are still alive then described in terms of their morphology and their statures are photographed, record things were put forward by the respondent relates to information on use method, both on processing method and the dose of each type of plant to be used for medication, parts of the plant used.

c. Data analysis

The results of the identification of plants obtained were then tabulated descriptively qualitatively and quantitatively by tabulating the results of interviews with medicinal plant species using emic and ethical approaches, namely 3 repetitions to get maximum results. Each plant specimen is analysed based on the part of the plant used, the method of preparation, the method of use, habitus, the use of drugs as treatment, care, reflection and health.

To calculate the plant parts used, use the Anggana formula (2011) as follows:

$$\% \text{ Used parts} = \frac{\Sigma \text{used parts}}{\text{Plant types}} \times 100\%$$

To calculate the percentage, for example habitus, the following formula is used:

$$\% \text{ Certain habitus} = \frac{\Sigma \text{each habitus}}{\text{Plant types}} \times 100\%$$

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

5.1 Conclusion

Based on the results of the research that had been carried out, it is concluded that in Sipituhuta Village, Pollung Subdistrict, Humbang Hasundutan Regency, there are 90 species and 46 families of plants that have potential as drugs. The most widely used plant parts are leaves 40 (44.4%). The most commonly used medicinal plant utilization is as a medication for 365 (57.75%). The most common method of concoction is by boiling 31 (33.33%). The method of use that is most often done was by drinking 52 (57.77%). The most common medicinal plant habitus was 46 (51.11%) herbs.

5.2 Suggestions

To complete this research, it is recommended to conduct further analysis of the chemical composition of medicinal plants scientifically by using parameters and testing the chemical quality of plants that have potential as drugs in Sipituhuta Village, Pollung Subdistrict, Humbang Hasundutan Regency. Then find out what plant species grow based on the height of the research location.

PROOFREADING

1.	country that has high	:	country with high
2.	medicine that has been preserved	:	medicine preserved
3.	With the modernization	:	
4.	Traditional medicine is still used by the community and until now many of them have scientifically proven had medicinal properties	:	The community still uses traditional medicine, and until now, many of them have scientifically proven to have medicinal properties
5.	that plants as medicinal ingredients have long been carried out by people in Indonesia	:	people in Indonesia have long carried out plants as medicinal ingredients
6.	the use as medicine	:	the use of medicine
7.	cultural heritage, as well as the global issue	:	cultural heritage and the global issue
8.	was caused by the existence of a system	:	was caused by a system
9.	as well as the development	:	and the development
10.	The Humbang Hasundutan community	:	Since ancient times, the Humbang Hasundutan community
11.	processed simply based	:	processed based
12.	known or believed by the public	:	known or accepted by the public
13.	it is also very helpful for the community	:	it is also beneficial for the community
14.	The processing method is still very simple	:	The processing method is still straightforward
15.	done by boiling and a few is done by squeezing	:	done by cooking and a few is done by pressing
16.	such as curing wounds	:	such as healing wounds
17.	The most widely used medicinal	:	The most commonly used medicinal
18.	that mostly often	:	that is most often
19.	The modernization of culture, it can cause	:	The modernization of culture can cause
20.	efficacious is containing active	:	efficacious contains active
21.	that used to reduce	:	that are used to reduce
22.	ingredients that owned medicinal properties	:	ingredients that own medicinal properties
23.	medicines is difficult	:	medicines are difficult
24.	choose alternative	:	choose an alternative
25.	experiences a weakness	:	experiences weakness
26.	so that it affects	:	so that which affects
27.	stress due to be depressed	:	stress due to being depressed
28.	becomes more fit	:	becomes fitter
29.	that it affects	:	that which affects
30.	seen from the daily lives	:	seen in the daily lives