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ETHNOBOTANY AND ETHNOZOOLOGY OF MEDICINE IN THE MANDAILING TRIBE IN NATAL DISTRICT, MANDAILING ATAL REGENCY

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ABSTRACT

This study aims to reveal and document belief systems, local knowledge systems, utilization practices related to plants and animals used as traditional medicine, knowing the value of the Index of Cultural Significance (ICS). This research was conducted in February-May 2023 in Pasar I Natal Village, Pasar II Natal Village, and Pasar III Natal Village, Natal District, Mandailing Natal Regency. This type of research is descriptive qualitative and quantitative. This study uses two approaches, namely the emic and ethical approaches. In this study also used key informants (key informants). Data collection techniques were carried out through semi-structured interviews, participatory observation, and documentation. Data analysis used the formula for cultural values/Index of Cultural Significance (ICS). The results of this study indicate that the Mandailing tribe utilizes 55 plant species included in the 35 most widely used families, namely the Zingiberaceae family and 14 animal species included in the 7 most widely used classes, namely the Mammalia class. The most widely used plant habitus is herb. The organs of plant species that are most widely used are leaves and the organs of animal species are all parts of the body. The most widely used method of processing plants is boiling and processing of animals as a traditional medicine that is often used is boiling, burning and without processing. The way to use plants as traditional medicine that is often used is to drink it and the way to use animals as traditional medicine that is often used is to eat it. The cultural importance values/Index of Cultural Significance (ICS) of plants utilized by the Mandailing Tribe which have the highest value are coconut (Cocos nucifera) and Turmeric (Curcuma domesstica) with an ICS value of 86 each.

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Introduction

Indonesia is an archipelagic country located in the equatorial region and is known as one of the countries with the second highest biodiversity wealth in the world after Brazil. In Indonesia, there are an estimated 100 to 150 plant families. Most of these plants have the potential to be used as fruit plants, spice plants, and medicinal plants (Helmina & Yulianti, 2021).

Indonesia not only has high biodiversity wealth but is also rich in local knowledge diversity such as functional foods and other traditional herbs (Zuhud et al., 2014). The diversity of local knowledge is due to the diversity of tribes and cultures, spread from Sabang to Merauke. Different locations of a community will also have different types of medicinal plants and animals used (Dewi & Karya, 2018).

Almost every tribe in Indonesia has its own knowledge and methods regarding traditional medicine. Indonesian people have long used plants and animals as natural medicines, especially people living in rural areas. Knowledge of the use of medicinal plants and animals is passed down from generation to generation (Viena et al., 2018).

One of the tribes that has knowledge in utilizing plants and animals as medicine is the Mandailing Tribe. The Mandailing Tribe is a tribe that inhabits Natal District, Mandailing Natal Regency (Siregar, 2020). Natal District is one of 23 districts in Mandailing Natal Regency, North Sumatra Province with an area of 6,621 square meters. The complete administrative boundaries of Natal District are in the north bordering Muara Batang Gadis District; in the south bordering Lingga Bayu District, Batahan District, and Sinunukan District; in the west bordering the Indian Ocean and in the east bordering Lingga Bayu District and Batang Natal District. The Mandailing Tribe in Pasar I Natal Village, Pasar II Natal Village and Pasar III Natal Village often cultivate plants to be used as medicine both in gardens and in their yards. In addition, the people of Pasar Natal Village also utilize marine products from their work as fishermen.

The Mandailing tribe has long known and used plants and animals as food, medicine, crafts and traditional ritual events. Each community has different knowledge and experience, both in terms of behavior in selecting plants and animals and how to process them. This local knowledge is important to explore and analyze because it can provide information on the management and utilization of plants and animals.

The Mandailing tribe has unique knowledge that is different from other local communities related to the use of living things as traditional medicine. These differences are seen in the selection of plant and animal species, the selection of organs and the processing of living things used as medicine. The species used are species that they often find in their living environment which may not necessarily be found elsewhere (Nasution et al, 2018).

The use of living things to treat various types of diseases is still the choice of some Indonesian people. Research on the use of plants as medicine has been widely conducted, such as research conducted by Tan et al., 2022 based on the results of the study of Ethnobotany of Medicinal Plants by the Buton Ethnic Community in Baubau City, it was obtained that 41 species of plants were used as traditional medicine, belonging to 23 families with a habitus in the form of 12 species of trees, 4 species of shrubs, 10 species of bushes and 14 species of herbs. Diseases that can be treated are fever, cough, ulcers, wounds, body odor, diabetes, hypertension, flu, colds, cancer, malaria, menstrual pain, irregular menstruation, canker sores, cataracts, loss of appetite and constipation. Research on

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the use of animals as medicine has also been widely conducted, such as research conducted by Krim et al., 2022 entitled Ethnozoology of the Use of Animals as Traditional Medicine in Sambulangan Village, North Bulangi District, Banggai Islands Regency, stating that there are 10 types of medicinal animals, namely: Monitor Lizard (Varanus sp.), Snake (Malayophyton sp.), Woodpecker (Myrmeleon sp.), Earthworm (Lumbricus sp.), Honey Bee (Apis sp.), Village Chicken (Gallus gallus sp.), Cuss (Ailurops sp.), Snail (Achatina sp.), Ceremende (Blaptica sp.) and Snakehead fish (Channa sp.). The diseases that have been identified can be cured by utilizing several medicinal animals found in Sambulangan Village, namely: general internal diseases, liver, shortness of breath/asthma, heart, surgical wounds, cough, gout, ulcers, typhus, and toothache. Observation results on ethnobotany and ethnozoology of medicine in the Mandailing Tribe in Natal District, Mandailing Natal Regency show that many Mandailing Tribe people still use plants and animals as medicine. However, local knowledge in utilizing medicinal plants and animals is only passed down from parents to children and grandchildren and passed down in families orally, so it is feared that amidst the current development of cultural modernization, this local wisdom will slowly be eroded by habits that can cause the loss of knowledge possessed by the Mandailing Tribe people. Research on ethnobotany and ethnozoology of medicine in the Mandailing Tribe in Natal District, Mandailing Natal Regency has never been conducted before. In addition, there has been no inventory and lack of documentation regarding plant and animal species with medicinal properties, belief systems, local knowledge systems and utilization practices related to plants and animals used as traditional medicine by the Mandailing Tribe in Natal District. Therefore, it is necessary to conduct ethnobotany and ethnozoology of medicine research to reveal and document the local knowledge of the Mandailing Tribe related to plants used as traditional medicine.

Materials and Methods

Location and Time of Research

This research was conducted in Pasar I Natal Village, Pasar II Natal Village and Pasar III Natal Village, Natal District, Mandailing Natal Regency. This research was conducted over a period of three months starting from February 2023 to May 2023.

Figure 1. Map of research location

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Tools and materials

The tools used in this study were stationery, sound recorder, camera, scissors, plastic rope, plastic bags, newspaper and herbarium paper. The materials used in this study were 70% alcohol and collected plant specimens.

Data Collection Techniques

Data collection in this study was carried out through semi-structured interviews, participatory observation, documentation, collection of plant samples and making herbariums if there were plants whose scientific names were not yet known.

Data Analysis

The data analysis used in this study is descriptive qualitative and quantitative. Quantitative data is analyzed using the Index Cultural Significance (ICS) from Turner (1988) the formula used is as follows:

$$ICS = \sum_{i=1}^{n} (qxixe)$$

Information:
Q : quality value
I : intensity value
e: exclusivity value

Results and Discussion

The Mandailing Tribe's Belief System Regarding Plants and Animals Used as Traditional Medicine

Based on the results of interviews conducted with informants in Pasar I Natal Village, Pasar II Natal Village and Pasar III Natal Village, Natal District, Mandailing Natal Regency, the Madailing Tribe has beliefs related to traditional medicine in addition to modern medicine. The Mandailing Tribe believes in the use of plants and animals as traditional medicine which is a legacy from their ancestors. This legacy is still believed because no community prohibits it, in the sense that all communities have the same beliefs in terms of the use of plants and animals as traditional medicine. The use of plants and animals as medicine has been believed since ancient times because the use of plants and animals as traditional medicine has been proven to be able to cure diseases. The Mandailing Tribe is inseparable from traditional medicine methods, either by mixing their own medicine or treatment by a shaman or datu.

When sick, the Mandailing people will meet the "Datu" for consultation about the illness they are experiencing. Then the datu will tell them what plants or animals will be sought to be used as medicine along with how to process and use them. In the use of traditional medicine, mantras are often used which are recited when applying the medicine. Some medicines also use prayers. The prayers used are in Arabic, namely the words basmalah, sholawat, Al-fatihah, ayat kursi, and long prayers are usually done by the datu.

The Mandailing tribe believes that illness can come from body fatigue or damage to certain organs, there are also illnesses caused by disturbances or reprimands from spirits called "Alak Bunian" or "Nasonida-i". In traditional medicine, the Mandailing tribe believes in the ability of duku or datu to cure various illnesses and is believed by the community because of the mantras they have and the prayers they read as a power that can cure an illness. The Mandailing tribe has a medicine that is best known as "ubat tarsapo, pangir, and nabau-bau". When someone is sick, both adults and children are first given ubat tarsapo. This ubat tarsapo is believed to provide a sense of calm and comfort when sick, this ubat tarsapo is also believed to be used to avoid disturbances from spirits to the sick person. This is because, when someone is sick, it is

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more easily disturbed by spirits or what is called alak bunian.

The community believes that in taking plants there are rules that must be obeyed. The Mandailing tribe says that mamulung or the process of taking plants in their place is prohibited if lightning or thunder is heard. Lightning before taking medicinal pulungan is considered not good, but if it is urgent it is considered not a problem or is allowed, but it is recommended to take scavenging the next day. Another rule that must be obeyed by the Mandailing tribe in taking plants as traditional medicine is to take enough plant organs with odd numbers, if the plants used in large quantities then it is permissible to take 5, 7 and nine and if only a little, it is enough to take 1 or 3.

So far, people's knowledge about the benefits of medicinal plants and animals to treat diseases and cannot be separated from the habits that have been inherited from their parents. They believe that a plant or animal can cure a disease because it is suitable for a person's body condition. The plants used as medicine are plants that have a bitter taste, because they believe that the bitter taste of plants has properties to cure diseases. The Mandailing community considers that the need for treatment when someone experiences health problems is a basic effort that needs to be attempted as a form of self-defense. In relation to this, the path of treatment is generally known as the medical path and the non-medical path through traditional paths (village medicine) with different enthusiasts and considerations for different reasons.

Local Knowledge of the Mandailing Tribe Regarding Plants and Animals Used as Traditional Medicine

Based on the results of interviews with sources in Pasar I Natal Village, Pasar II Natal Village and Pasar III Natal Village, it was obtained that the plant species used as traditional medicine were 55 plant species used as traditional medicine by the Mandailing Tribe. The data can be seen in the following table:

Table 4.1 Plant Species Used as Traditional Medicine

No.	NamePlant			Family	Habitus	Organs Used
	Local Name	**Indonesian Name**	**Scientific Name**			
1.	*Gadung tree Thailand*	Leaf Thai Sweet Potato	*Abelmoschus manihot* (L.) Medical.	Malvaceae	shrub	Leaf
2.	*Salimbatutuk*	Jeringau	*Acorus calamus*L.	Araceae	Herbs	Rhizome
3.	*Smells*	Bandotan	*Ageratum conyzoides*L.	Asteraceae	Herbs	Leaf
4.	*Onion red*	Onion red	*Allium cepa*L.	Liliaceae	Herbs	tuber
5.	*Garlic*	Onion White	*Allium sativum* L.	Liliaceae	Herbs	tuber
6.	*Base*	Galangal	*Alpine galanga* (L.) Willd.	Zingiberaceae	Herbs	Leaf AndRhizome

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7.	*Tarutung Dutch*	Soursop	*Annona muricata*L.	Annonaceae	Tree	Leaf
8.	*Breadfruit*	Breadfruit	*Artocarpus altilis*(Perkinson exFAZorn) Fosberg	Moraceae	Tree	Leaf
9.	*Fruit Boss*	Star fruit wow	*Averrhoa bilimbi*L.	Oxalidaceae	Tree	Leaf
10.	*Botanical*	Pawpaw	*Papaya fruit* L.	Carica	Tree	Flowers and Leaves
11.	*What*	cotton	*Ceiba pentandra*(L.) Geartn.	Malvaceae	Tree	Leaf
12.	*Ulim*	Cinnamon	*Cinnamomum burmanni*(No & T. Nees) Bloom	Lauraceae	Tree	Stem
13.	*The Great War*	The Great War	*Cordyline fruticose* (L.) A. Chev.	Asparagus	Tree	Leaf
14.	*Sour*	Lime	*Citrus aurantifolia*(Christ) Swingle	Rutaceae	Tree	Fruit
15.	*Sour milk*	Lime	*Citrus hystrix* DC.	Rutaceae	Tree	Fruit
16.	*Arambir*	Coconut	*Cocos nucifera* L.	Palm	Tree	Fruit
17.	*Coriander*	Coriander	*Coriandrum sativum*L.	Apiaceae	Herbs	Fruit
18.	*Sintrong*	Sintrong	*Crassocephalus crepidiodes*(Benth.) S. Moore	Asteraceae	Herbs	Leaf
19.	*Hunik*	Turmeric	*Curcuma domestica*val.	Zingiberaceae	Herbs	Rhizome and Leaves
20.	*Curcuma*	Curcuma	*Curcuma zanthorriza* Roxb.	Zingiberaceae	Herbs	Rhizome
21.	*Cheep Cheep*	Lemongrass	*Cymbopogon citratus*DC.	Poaceae	Herbs	Stem

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22.	*Palm oil*	Palm oil	*Elaeis guineensis* Jack.	Arecaceae	Tree	Leaf
23.	*Pati'an*	Make sure buffalo	*Euphorbia hirta*L.	Euphorbiaceae	Herbs	Leaf
24.	*Rayon Flower*	Hibiscus	*Hibiscus rosa-sinensis*L.	Malvaceae	shrub	Leaf and Flowers
25.	*The Sasangkil*	The deer	*Justice of the gendarussa* Burm.f.	Acanthaceae	shrub	Leaf
26.	*Incor*	Aromatic ginger	*Kaempferia galangal*L.	Zingiberaceae	Herbs	Rhizome
27.	*Cold-cold*	Cocor duck	*Kalanchoe pinnate*	Crassulaceae	Herbs	Leaf
28.	*Anchor*	Manila sapodilla	*Manilkara achras*Mill.	Sapotaceae	Tree	Leaf AndFruit
29.	*Podoms-podoms*	Mimosa	*Mimosa pudica* L.	Mimosaceae	shrub	Leaf
30.	*Sirompaspara*	Climbing vines	*Mikania micrantha* Kunth.	Asteraceae	Liana	Leaf
31.	*The Pariyas*	Bitter Melon	*Momordica charantia*L.	Rubiaceae	shrub	Leaf
32.	*Pace*	Noni	*Morinda citrifolia*L.	Rubiaceae	shrub	Leaf
33.	*Barong*	Moringa	*Moringa oleifera*L.	Moringa	Tree	Leaf
34.	*Banana*	Banana	*Moses x paradise*L.	Musaceae	Herbs	Leaf and Flowers
35.	*Jailan*	Rambutan	*Nephelium lappaceum*L.	Sapindaceae	Tree	Leaf
36.	*Cat whiskers*	Moustache cat	*Orthosiphon spicate*Thunb.	Lamiaceae	Herbs	Leaf
37.	*Eme*	Paddy	*Oryza sativa*L.	Poaceae	Herbs	Fruit
38.	*Pandanus civet*	Pandanus	*Pandanus amaryllifolius* Roxb.	Pandanus	Bush	Leaf
39.	*Peat- peat*	Rumbusa	*Passiflora foetida*L.	Passifloraceae	Liana	Flowers and Fruits
40.	*Pokat*	Avocado	*Persea Americana* Mill.	Lauraceae	Tree	Leaf

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41.	*Crown of the gods*	Crown of the gods	*Phaleria macrocarpa* (Scheff.) Boerl	Thymeaceae	shrub	Fruit
42.	*Supported child*	Meniran	*Phylanthus niruri*L.	Euphorbiaceae	Bush	Leaf
43.	*The Burangir*	Betel	*Piper betle*L.	Piperaceae	Herbs	Leaf
44.	*Simarkarias*	Chinese betel leaf	*Peperomia pellucida*(L.) Kunth	Piperaceae	Herbs	Leaves and stems
45.	*Guava*	Guava	*Psidium guava*L.	Myrtaceae	shrub	Leaf
46.	*The throes of the sun*	Ground cherry	*Physalis peruviana*L.	Solanaceae	Herbs	Leaves, Fruit and Stems
47.	*Distance*	Distance	*Ricinus communis*L.	Euphorbiaceae	shrub	Leaf
48.	*Mother in law's tongue*	Tongue parents law	*Sansevieria intrifasciata* Prain.	Asparagus	Herbs	Leaf
49.	*Rice-rice*	Katu	*Sauropus androgynous* (L.) Merr.	Euphorbiaceae	shrub	Leaf
50.	*Congke*	Clove	*Syzygium aromaticum* (L.) Merr.	Myrtaceae	shrub	Flower
51.	*Regards*	Regards	*Syzygium polyanthum*(Wght) Walp.	Myrtaceae	shrub	Leaf
52.	*Javanese Tamarind*	Tamarind	*Tamarind indica*L.	Fabaceae	Tree	Fruit
53.	*Ali-ali root*	Brotowali	*Tinospora crispa*(L.) Hook. f. & Thomson	Menispermaceae	Liana	Stem
54.	*Bungle*	Bangles	*Zingiber casummunar* Roxb.	Zingiberaceae	Herbs	Rhizome
55.	*Sorry*	Ginger	*Zingiber officinale* Roscoe	Zingiberaceae	Herbs	Rhizome

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Based on the results of interviews with sources in Pasar I Village, Pasar II Village, and Pasar III Village, related to animal species used as traditional medicine by the Mandailing Tribe, 10 species were obtained. The data can be seen in the following table:

Table 4.2 Animal Species Used as Traditional Medicine

No.	Animal Names				Organs Used
	Local Name	Indonesian Name	Scientific Name	Class	
1.	*Snail*	Snail	*Achatina*Sp.	Gastropods	Meat
2.	*Honey bee*	Honey bee	*Apis nigrocincta*	Insects	Honey
3.	*Lombok*	Cow	*Bos indicus*	Mammals	Tongue
4.	*Routing*	Fish cork	*Channa striata*	Actinopterygii	Meat
5.	*Bird*	Kampong chicken	*Galus domesticus*	Aves	Egg
6.	*Five-way*	Leech	*Hirudo medicinal*	Clitellata	All over limb
7.	*Goya*	Earthworms	*Lumbiercus*Sp.	Clitellata	All parts of the body
8.	*Lompong*	Kalilawar	*Macroglossus minimus*	Mammals	Meat
9.	*Anteaters*	Land anteater	*Myrmeon*Sp.	Insects	All parts of the body
10.	*Siri-siri*	Dragonfly	*Pantala flavescens*	Insects	All parts of the body
11.	*Ambeng*	Goat	*Capra aegagrus*	Mammals	Meat and Blood
12.	*Bolut*	Eel	*Monopterus albus*	Actinopterygii	All parts of the body
13.	*Biaok*	Monitor lizard	*Varanus*Sp.	Reptiles	Tongue
14.	*Type*	Squirrel	*Squirrel*Sp.	Mammals	Meat

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Practices of Utilizing Plants and Animals Used as Traditional Medicine

Based on the results of interviews and observations, there are several ways to process plant species as traditional medicine, namely by boiling, grinding, grating, cutting, soaking, squeezing, baking, and scraping. The classification of plant species based on the processing method can be seen in the following image:

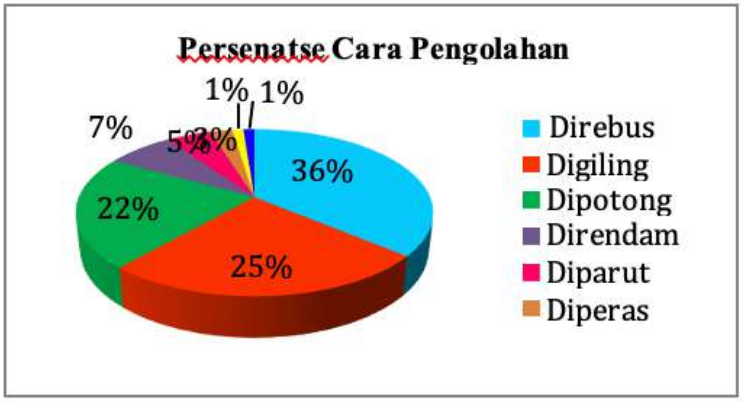

Figure 2. Percentage of Plant Processing Methods

Based on the results of interviews and observations, there are several ways of processing animal species as traditional medicine, namely by boiling, stirring, burning, grinding and drying. The classification of animal species based on the processing method can be seen in the following picture:

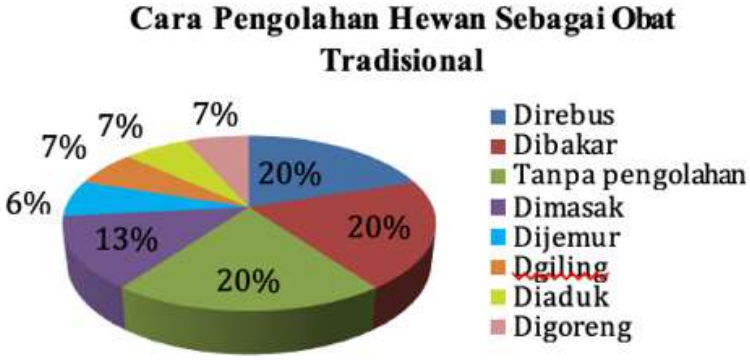

Figure 3. Percentage of Animal Processing Methods as Traditional Medicine

Based on the results of interviews and observations, there are several ways of using plant species used as traditional medicine, namely by drinking, smearing, sticking, gargling, eating, wearing around the neck, shaking, and bathing. The classification of plant species based on how they are used can be seen in the following picture:

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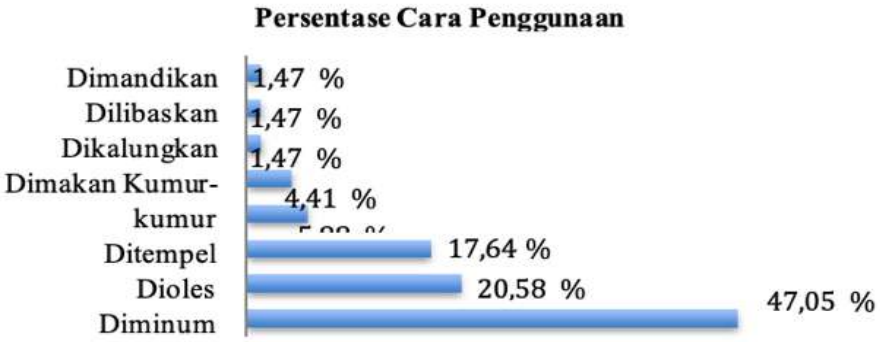

Figure 4. Percentage of Ways of Using Medicinal Plants

Based on the results of interviews and observations, there are several ways of using animal species used as traditional medicine, namely by drinking, eating, sticking, smearing and biting. The classification of animal species as traditional medicine based on how they are used can be seen in the following picture:

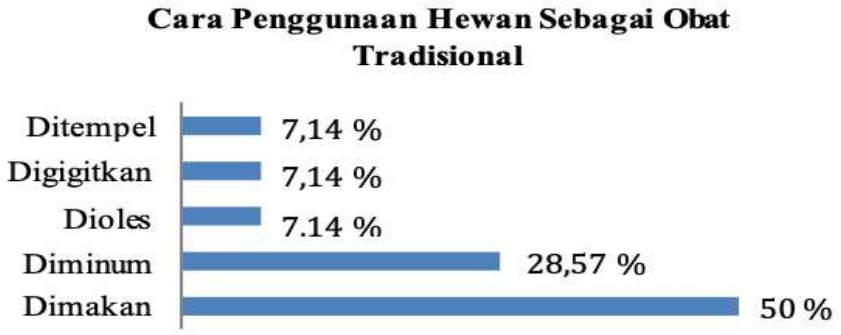

Figure 5. Percentage of Ways of Using Medicinal Animals

Index Value of Cultural Significane

The value of cultural significance or Index of Cultural Significance (ICS) can be determined through calculations based on the value of plant quality, intensity value and exclusivity value of plants. The ICS value can indicate a level of importance of plants used for traditional medicine. If the value of plant quality, plant intensity and plant exclusivity is high, then the plant has a high cultural significance or ICS value for the community. Conversely, if the value of plant quality, plant intensity value and plant exclusivity value are low, then the ICS value becomes low. Plants that have more than one use, are often used and there are no other options that can replace them can have a very high ICS value. Conversely, plants that only have one use, are rarely used and there are other options to replace them can have a low ICS value.

Based on the results of interviews conducted with informants in Pasar I Natal Village, Pasar II Natal Village and Pasar III Natal Village, Natal District, Mandailing Natal Regency, 55 plant species were obtained that were used as traditional medicine ingredients. The results of the ICS calculation displayed in table 4.6 show the cultural importance value of plants ranging from those with very high, high, medium, low, very low values and plants with no value. The table shows the largest category of plants with medium and low ICS values. This is in line with the research of Rahayu et al. (2012) that 45 plant species in the Bodogol Lowland Forest Area, West Java have an ICS value of >20 which are

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considered the most important for the community. Based on the ICS category of the 45 species obtained, there is only 1 plant species with the highest quality value, intensity of exclusivity of use, namely Kawung (Arenga pinnata) with an ICS value of 86. And also in line with the research conducted by Eni et al. (2019) related to the Ethnobotany Study of Medicinal Plants of the Hindu Community in Jagaraga Village, West Lombok Regency, West Nusa Tenggara that there are 5 plant species with the highest ICS rankings, namely Jatropha curcas, Curcuma longa, Kaempferia galangal, Allium cepa and Musa paradisiaca. The ICS value is influenced by the quality score, intensity of use, level of community preference, and the number of types of use owned by a species. Thus, it can be assumed that the species with the highest ICS values are plants with a relatively higher level of cultural importance compared to other types.

Conclusion

The Mandailing tribe believes that illness can come from body fatigue or damage to certain organs, there are also illnesses caused by disturbances or reprimands from spirits called "Alak Bunian" or "Nasonida-i". In traditional medicine, the Madailing tribe believes in the ability of shamans or datus to cure various illnesses and is believed by the community because of the mantras they have and the prayers they read as a power that can cure an illness.

The plant species used as traditional medicine by the Mandailing Tribe are 55 species included in 35 families, the highest family is zingiberaceae. The parts of plants or plant organs used by the Mandailing Tribe as traditional medicine are leaves, fruits, rhizomes, flowers, stems, and tubers. The most widely used plant organ is the leaf organ with 36 species with a percentage of 55.38%. The classification of medicinal plant species based on their stature or habitus is herbs, trees, shrubs, lianas and bushes. Not only medicinal plants, the Mandailing Tribe also uses animals as traditional medicine, namely 14 species of medicinal animals included in 7 animal classes with the highest class being Mammals with a percentage of 28.57%. The organs of medicinal animals used by the Mandailing Tribe as traditional medicine are meat, tongue, eggs and all parts of the body. The organs that are often used are all parts of the body and meat with a percentage of 44.44%.

. The use of plants used as traditional medicine by the Mandailing Tribe is by boiling, grinding, cutting, soaking, grating, squeezing, baking, and scraping. The method of processing plants as traditional medicine that is often used by the Mandailing Tribe is by boiling. The method of using medicinal plants by the Mandailing Tribe is by drinking, smearing, sticking, gargling, eating, wearing around the neck, shaking, and using for bathing. The method of using medicinal plants that is often done is by drinking. The method of processing animals as traditional medicine is by boiling, drying, grinding, stirring, burning, frying, cooking, and without processing, but the method that is often used is by burning and without processing. The method of using animals as medicine is by drinking, eating, sticking, smearing and biting. The method of using animals as traditional medicine is by eating.

The cultural significance/Index of Cultural Significance (ICS) of plants utilized by the Mandailing Tribe that have the highest value are coconut (Cocos nucifera) and turmeric (Curcuma domesstica).

Thank-you note

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