
The Community Perception in the Tobelo Dalam Tribe Againsts Plants as Traditional Medicine

Budi Prasetyo*

*Biology Study Program, FST, Open University, Cabe Raya Street, Pondok Cabe, Pamulang District, South
Tangerang City, Banten Province, 15418, Indonesia*

Email: budi-p@ecampus.ut.ac.id

Abstract

The Tobelo Dalam people have a wealth of local knowledge about the use of medicinal plants from their ancestors and have the expertise to mix medicinal plants to treat various diseases suffered by the community. The Tobelo Dalam people have a tendency to keep the names of the types of medicinal plants they use secret. The research aims to describe the local knowledge of the Tobelo Dalam community about the names of various types of medicinal plants, their processing methods, various types of diseases, their management strategies, and to assess the importance of medicinal plants according to people's perceptions. Research uses a combination of qualitative and quantitative methods based on emic and ethical approaches. Data collection techniques for the use of medicinal plants using the pebble distribution method (PDM) by means of Focus Group Discussion (FGD). Assessment of the importance of medicinal plants in the culture of society is done by calculating the value of ICS (Index of Cultural Significance). The results showed that 53 species of medicinal plants were identified from 45 clans and 35 tribes. In the social life of the Tobelo Dalam community there were 30 types of diseases classified as not at high risk of death. Some processing methods to make traditional medicine are still relatively simple, that is by boiling or soaking warm water, burning, kneading or pounding, and by sitting it. The results of the ICS assessment of various types of medicinal plants showed that 26.4% were included in the group of plants that had high ICS values (17-24); 8 types of medicinal plants (15.1%) were in the moderate category, and 31 types (58.5%) were classified as low. In terms of conservation studies, the Tobelo Dalam community has not protected the sustainability of the use of various types of medicinal plants that grow in their neighborhood.

Keywords: ethnobotany; qualitative; quantitative; PDM; ICS.

* Corresponding author.

1. Introduction

Geographically, the Aketajawe-Lolobata National Park (TNAL) is located in North Maluku Province precisely in East Halmahera Regency and Island Tidore City. The National Park area has an area of 167,300 hectares [1]. Based on the distribution of flora and fauna, the TNAL area is included in the Wallacea biogeography namely biogeography with biota content derived from a mixture of Sundanese (Oriental) and Sahul (Australian) biogeography and even the biota has its own peculiarities due to its high endemism. It is the right thing if the National Park area is a conservation forest for the protection of fauna and endemic flora in North Maluku [2,3]. The National Park is estimated to have several fauna including 51 mammal species, 243 bird species, 42 reptile species, and 6 amphibian species¹. TNAL area is the habitat of 63 species of medicinal plants, 41 species of understorey, and 53 other species, especially palm and rattan [2]. Studies on the existence of local communities are carried out by ethnobotany experts to pay attention to the importance of traditional communities in managing and utilizing biological resources in their environment [4,5]. No exception, this applies also to the traditional community of Tobelo Dalam who live around the TNAL area, Halmahera Island. The traditional community consists of 19 groups living in areas such as East Halmahera, Central Halmahera, and Tikep. It is estimated that from all these groups only two groups who live outside the area so that in meeting their daily needs do not directly depend on TNAL's wealth, namely the Akejira and Woe Sopen groups/Central Halmahera [6]. The pattern of social life of the Tobelo Dalam tribe is not much different from other tribes who live in rural areas, namely having settlements, gardens or fields, and having open economic relations with other residents [6]. The livelihoods of some communities still depend on the results of harvesting biological resources from forests in the TNAL area. In addition, it is also known that the Tobelo Dalam people have very interesting traditional cultural properties and have a wealth of local knowledge about the use of medicinal plants from their ancestors [7] and have the expertise to mix medicinal plants to treat various diseases suffered by the community [1]. The Tobelo Dalam people have a tendency to keep the names of the types of medicinal plants they use secret [8], which triggers the curiosity of scientists to conduct research from an ethnobotany point of view. This condition is also supported by data from the World Health Organization (WHO) which estimates that around 80% of the population of developing countries still rely on traditional medicine, and 85% of traditional medicine in practice use plants as their main ingredients [9,10]. The research aims to describe the local knowledge of the Tobelo Dalam community about the names of various types of medicinal plants, their processing methods, various types of diseases, their management strategies, and to assess the importance of medicinal plants according to people's perceptions.

2. Method

2.1 Field research

The location of the research was carried out in the traditional community of the Tobelo Dalam Tribe in Ino Jaya Village, South Wasile District, East Halmahera City, North Maluku Province, geographically located in the ordinate 0° 46' 23" N dan 127° 49' 09" E (Figure 1). Total population inhabited the Village was 312 people, consisted of 113 families, and most of them work as farmer (harvest biological resources in the forest).

2.2 Data sampling

Ethnobotany research uses a combination of qualitative and quantitative methods based on emic and ethical approaches [11]. The emic approach is chosen to explore and obtain data about people's knowledge of the objects being observed from their point of view and language. Then through the system of knowledge and cognition, community knowledge that is categorical, code, and cognitive (emics) rules is proven through conceptual categories obtained through scientific background (ethics) [11].

2.3 Data analysis

Ethnobotany data collection techniques were carried out using the Pebble Distribution Method (PDM) in the Focus Group Discussion (FGD) [12,13]. In addition, in order to obtain more comprehensive data, interviews were also conducted on knowledge of medicinal plant utilization [14] to 2 key informants [15,16,17,18,19] and 41 respondents [14]. The measurement of the importance of each species of medicinal plant in relation to the culture of the Tobelo Dalam tribe is done by calculating the modified Cultural Interest Index (ICS) of Turner [20].

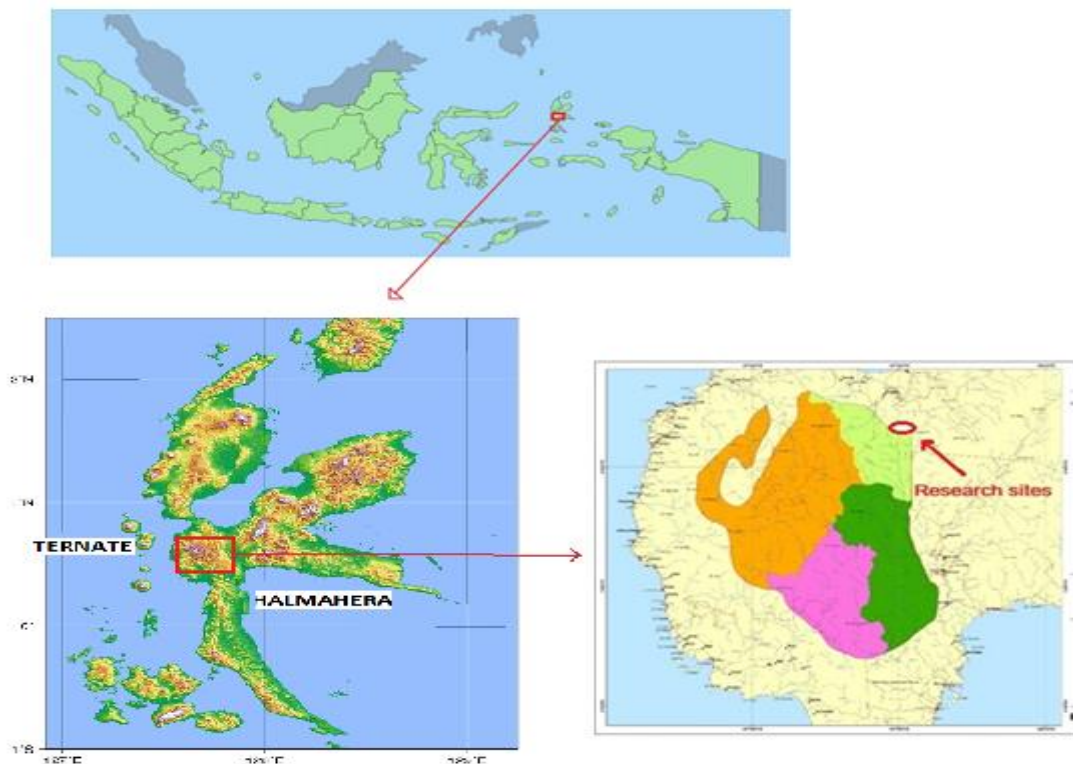


Figure 1: Map of research sites

3. Results and discussion

3.1 Traditional knowledge about the use of medicinal plants in the Tobelo Dalam tribe

Traditional knowledge systems that grow in the lives of local people, especially those related to plants, are basic knowledge that is very important for the survival and sustainability of their offspring [22,23]. The use of various types of plants as ingredients for traditional medicine by the Tobelo Dalam tribe has been going on for decades and has been hereditary [8]. In fact, this is also confirmed by the opinion of [7] in a study of the results of research on medicinal plants used by the Tobelo Dalam tribe community. Knowledge about the use of traditional medicinal plants used by the Tobelo tribe has an esoteric nature means that species of medicinal plants used as traditional medicinal materials are always kept secret, so that knowledge is not misused [8]. This traditional knowledge still survives until now because it is preserved and practiced by one of its family members. They obtain this knowledge by means of oral communication [24,21]. In the life of the Tobelo Dalam tribe in Ino Jaya Village is known to have 2 (two) physicians (*jiwa hou houro*) and 1 (one) midwife (*dimo dimono*) as parents who are believed by the local community to have the expertise to be able to treat sick people. Many residents do not have the expertise to treat diseases in their environment. Usually medical treatment for various diseases found in the Tobelo Dalam tribe in Ino Jaya Village is done by means of people who are sick (*here*) going to a physician (*hou houro*) or they go to the midwife (*dimo dimono*) for women who are pregnant until near the time of delivery. However, there are also people who consume medicines that are sold in stalls, or go to the Puskesmas which is about 5.5 kilometers away. In general, understanding knowledge about the use of medicinal plants, they get from their parents or grandparents. In the case, in fact the lives of *hou houro* and *dimo dimono* never closed the door to teach their citizens to be able to practice traditional medicine. If the management system for local knowledge about the use of medicinal plants in the Tobelo Dalam community does not change much, it does not rule out the possibility of rapid technological advancements today, local knowledge will be eroded and less interesting to learn, which will eventually become extinct. This statement is reinforced by the opinion [25,24,26,27,28].

3.2 Wealth of plant species medicines in Tobelo Dalam tribe culture

As the life of tribes in Indonesia, the Tobelo Dalam community interacts with their environment to recognize various plant species that have various uses for life. Among these species there are those that are used as a fulfillment of the need for food, clothing, wood for fire, building construction, and traditional medicinal ingredients [29,30,31]. Based on the results of the field study, it was identified that the total wealth of medicinal plant species utilized by the Tobelo Dalam tribe in the study site amounted to 53 species from 45 genera and 35 tribes. Among the various species of medicinal plants recorded, there is also one species of Vertebrate animal (*Euplexaura antipathes* or often known as *bahar* root) from the Antipatharidae family which is used to treat convulsions in young children (convulsions in bulging eyes), namely by taking the root *bahar* is then burned and the smoke is attempted to be inhaled by sick children (Table 1). Overall, a variety of diseases indicated were able to be treated by utilizing medicinal plants in the Tobelo Dalam community totaling 30 diseases (Table 1). Among these types of diseases there are some of the same diseases, but different ways of healing are used by different medicinal plants, namely cough, malaria, syphilis, ulcers and flatulence. All types of diseases in the community are not included in the category of diseases at high risk of death such as heart disease, lung disease, kidney failure, stroke, or cancer, but it is more to a type of mild disease such as headache, cough, fever, toothache, abdominal pain, malaria, rheumatic pain, and ulcers [21]. Table 1 also informs that the Tobelo Dalam community in the village of Ino Jaya, Subdistrict of south Wasile, utilize a variety of medicinal plant species by

making a single compound or combining with other plant species. Similarly, the processing method is relatively very simple, some types of diseases are treated by boiled [24], soaked in warm water, burned, kneaded or pounded, some are even sat on it. In addition, in the process of utilizing the medicinal plants are also used a variety of plant organs including stems (*gota*), leaves (*mahoka*), roots (*mangotuku*), fruit (*mahohoko*), flowers (*mahuri*), and rimpang (*majaka*) [24,10,7,32,31]. The number of species of medicinal plants utilized by the Tobelo Dalam tribe amounted to 53 species, among which 68% belonged to the group of trees (*gota marohe*) while 20% belonged to the herbaceous group (*rurubuku*), and the rest were occupied by groups of shrubs (*gorame*) and liana (*gumini*) with the same percentage [7,31]. The following names of various medicinal plant species and the way they are treated by the Tobelo Dalam community in Ino Jaya Village are presented in Table 1.

Table 1: Species of medicinal plants, names of types of diseases, and methods of processing carried out by the Tobelo Dalam tribe community

No	Regional name	Physiogy	Scientific name	Family	The organ used	Disease	Treatment method
1	Bobuluturu	Tree	<i>Ficus septica</i> Burm.f.	Moraceae	All organs	1. Cough 2. Abdominal pain	All plant organs are soaked in 1 cup of hot water for ½ hour, after being cold drunk.
					Leaf	3. Preventing vomiting when driving	Leaves are sat on while riding public transportation /personal
2	Kapasa	Tree	<i>Gossypium acuminatum</i> Roxb.	Malvaceae	Leaf	Fever	Leaves sufficiently soaked in 1 cup of hot water for ½ hour, if it is cold, continue to drink
3	Dobidobiki	Herbs	<i>Commelina nudiflora</i> Linn.	Commelinaceae	Root	Breathless	Sufficient roots are boiled for + 1 hour, after being cold drunk.

No	Regional name	Physiogy	Scientific name	Family	The organ used	Disease	Treatment method
4	Kokayu	Shrub	<i>Pandanus</i> sp.	Pandanaceae	All organs	Increasing appetite	Sufficiently all the kokayu organs

5	Behelo	Tree	<i>Cinnamomum macrophyllum</i> Miq.	Lauraceae			and behelo boiled for + 1 hour, after being cold drunk
6	Kopasa	Tree	<i>Vitex cofassus</i> Reinw.	Verbenaceae	All organs	Fever	All the organs of Kopasa + iron wood (dowora) + nututu wood+ ego-egono mixed, boiled for + 1 hour, after cold the water is drunk
7	Dowora/ Iron wood	Tree	<i>Intsia bijuga</i> (Colerb.) O.K	Fabaceae			
8	Nututu wood	Shrub	<i>Alphitonia moluccana</i> T. & B.	Rhamnaceae			
9	Ego-egono	Herbs	<i>Physalis peruviana</i> Linn.	Solanaceae			
10	Topaya	Tree	<i>Carica papaya</i> L.	Caricaceae	Leaf	Malaria	Leaves sufficiently boiled for + ½ hour, after cold the water is drunk
11	Yangere/ telur wood	Tree	<i>Alstonia scholaris</i> R.Br.	Apocynaceae	Stem	Malaria	Sufficient stems soaked in 1 cup of water and continue to drink
12	Goloba	Herbs	<i>Alpinia nutans</i> (L.) Roscoe	Zingiberaceae	Rod inside	Wounds	The rod inside is scratched on the ground and then skin / ground until bruises smooth, smeared on the wound
13	Pokor-pokor	Tree	<i>Pimeleodendron amboinicum</i> Hassk.	Euphorbiaceae	Stem	Constipation / difficulty defecating	The bark is removed, take enough of the stem and then soaked in hot water + ½ hour, after the water is cold then drunk
14	Homoko wood	Tree	<i>Vitex</i> sp.	Verbenaceae	Leaf	Eliminate phlegm when nasal congestion	The leaves are squeezed and then mixed while inhaled
No	Regional name	Physiognomy	Scientific name	Family	The organ used	Disease	Treatment method

15	Totaleo mauru	Tree	<i>Musa</i> spp.	Musaceae	Leaf	Sakit kuning/ sakit gero	The leaves are soaked in 1 cup of warm water then continue to drink
16	Sago	Tree	<i>Metroxylon sagu</i> Rottb.	Arecaceae	The bark	Defecate but bleeding	Sago bark + leleko wood stem + gugete rope + red tobu stem which is then mixed and then boiled, when it is cold then the water is drunk
17	Leleko wood	Tree	<i>Aceratium</i> sp.	Elaeocarpaceae			
18	Tali gugete	Shrub	<i>Piper insignilimbun</i> DC.	Piperaceae			
19	Red Tobu	Herbs	<i>Saccharum officinarum</i> L.	Gramineae/ Poaceae			
20	Soki wood	Tree	<i>Rhizophora conjugata</i> Linn.	Rhizophoraceae	The bark	Herb for women after childbirth	A mixture of bark of soki wood, babanga, hamehe wood, and Besi wood / dowora as enough as possible then boiled, when it is cold the water is drunk
21	Babanga	Tree	<i>Rhizophora</i> sp.	Rhizophoraceae			
22	Hamehe wood	Tree	<i>Macaranga tanarius</i> Muell.Arg.	Euphorbiaceae			
23	Tali kuning	Liana	<i>Arcangelisia flava</i> Merr.	Menispermaceae	Stem	Back pain	Cleavage as enough as possible then boiled, when it is cold then drink it
24	Akar kuning	Liana	<i>Fibraurea chloroleuca</i> Miers.	Menispermaceae		Malaria	Take enough akar kuning and then boil it, if it is cold then drink
25	Buah coklat	Tree	<i>Theobroma cacao</i> L.	Malvaceae	Fruit skin	Bisul	The skin of the fruit is scraped, the powder results are applied to ulcers

No	Regional name	Physiognomy	Scientific name	Family	The organ used	Disease	Treatment method
26	Toyomo wood	Tree	<i>Osmoxylon</i>	Araliaceae	Stem	Wound pus	Cleavage are sufficiently

			<i>palmatum</i> (Lamk.) Philipson				burned, then the ashes are mixed with coconut oil and smeared onto the wound
27	Dedoro wood	Tree	<i>Kleinhovia hospita</i> Linn.	Sterculiaceae	Leaf	Headache	Adequately squeezed young leaves are placed near the eyes and nose
28	Tali pepewi	Tree	<i>Mallotus moluccana</i> Muell. Arg.	Euphorbiaceae	Flower	Tootache	Flowers wrapped in a piece of cloth and then dipped in hot water, then placed on the affected tooth
29	Kayu lipi-lipite	Tree	<i>Syzygium polycephaloides</i> Me rr.	Myrtaceae	Leaf	Sprained legs	Leaves sufficiently boiled briefly then taped to the sprained leg
30	Bole/banana	Tree	<i>Musa</i> spp.	Musaceae	Banana flower (banana heart)	Streamlining when nursing mothers	The banana's heart is sufficiently boiled until cooked then the water is drunk
31	Gohora	Tree	<i>Myristica fragrans</i> Houtt.	Myristicaceae	Leaf	Scabies on the skin	The leaves are chopped into small plus kerosene, then smeared on scabies
32	Langsa	Tree	<i>Lansium domesticum</i> Corr.	Meliaceae	Stem	tinea versicolor	The stem is scraped, the powder results are rubbed on the tinea versicolor
33	Pugu-pugutu Wood	Tree	<i>Lunasia amara</i> Blanco	Rutaceae	Stem	Sore eyes	The stem is scraped, the powder is mixed with cold water as enough as possible, then wrapped in a piece of cloth, then squeezed near the eye so that the droplets enter the eye

No	Regional name	Physiognomy	Scientific name	Family	The organ used	Disease	Treatment method
34	Ngofangoe wood/	Tree	<i>Castanea acuminati</i>	Fagaceae	Root	Want to get a child	The sliced roots are then eaten raw

	Kayu Anak banyak		<i>ssima</i> Bl.			(girl)	
35	Leleko merah	Tree	<i>Pisonia</i> sp.	Nyctaginaceae	Stem	Ulcers, sores and scabs	A small portion of the stem is burned, the ashes are mixed with coconut oil, stick to the wound
36	Leleko putih	Tree	<i>Myristica fatua</i> Houtt.	Myristicaceae	Leaf	1. F latulenc/ hard 2. S yphilis	A mixture of leleko daun putih, ubo-ubo, toyomo, kapu, cade-cade, and akar baru as enough as possible, boil until boiled, cooled, then drink the water
37	Ubo-ubo	Shrub	<i>Hibiscus rosa-sinensis</i> Linn.	Malvaceae			
38	Toyomo	Tree	<i>Osmoxylon umbelliferum</i> Merr.	Araliaceae			
39	Kapu	Tree	<i>Octomeles sumatrana</i> Miq.	Datiscaceae			
40	Cade-cade	Herb	<i>Croton hirtus</i> Herit.	Euphorbiaceae			
41	Akar baru	Tree	<i>Caryota rumphiana</i> Mart.	Palmae			
42	Gofuaerani	Herbs	<i>Hemigraphis bicolor</i> (Bl.) Hall. f.	Acanthaceae	Leaf	Cough medicine	Mix of leaves of Gofuaerani, bawanga putih, bawanga merah as enough as possible then soak in warm water 1/2 hour then drink the water
43	Bawang a putih	Herbs	<i>Allium sativum</i> L.	Amaryllidaceae			
44	Bawang a merah	Herbs	<i>Allium cepa</i> L.	Amaryllidaceae			

No	Regional name	Physiognomy	Scientific name	Family	The organ used	Disease	Treatment method
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45	Dipong/ areca nut	Tree	<i>Pinanga punicea</i> Merr.	Palmae	Fruit	Smallpox	A mixture of fruit, takiu grass, lemon fruit as enough as possible is pounded until smooth, then rub on the skin affected by smallpox
46	Takiu	Herbs	<i>Cyperus rotundus</i> L.	Cyperaceae	All organs		
47	Lemon	Herbs	<i>Citrus</i> sp.	Rutaceae	Fruit		
48	Tuada/ Jackfruit	Tree	<i>Artocarpus heterophyllus</i> Lamk	Moraceae	The bark	Diarrhea	Take a small portion of the bark, then burn it with cold water and drink it.
49	Kweni	Tree	<i>Mangifera odorata</i> Griffith	Anacardiaceae	The bark	Sifilis	Take enough of the bark and mix with water and then boil it, after the boiled water is cool then drink immediately
50	Bidoho/si rih	Liana	<i>Piper betle</i> L.	Piperaceae	Leaf	Leucorrhoea	Take enough leaves and mix with water and continue to boil after warm boiled water and then wash it on the genitals
51	Boboko	Herbs	<i>Adenostemma lavenica</i> (L). O.K.	Compositae	Leaf	Flatulence / hard	Mix boboko leaves with white leleko leaves, enough red leleko leaves to add water then boil it. If it's cold, the boiled water is drunk
52	Tataulu	Tree	<i>Ficus adenosperma</i> Miq.	Moraceae	1. root 2. leaf	F 1. Vomiting blood I 2. A bortion	Take a little root and then boiled it, after cold the water is drunk Take enough leaves and then boil it, after cold the water is drunk
53	Hamangu	Tree	<i>Randia oppositifolia</i> Koord.	Rubiaceae	The bark of the stem	Stiff Sore	Take enough bark of the stem and then boil it, after cold the water is then drunk

3.3 Value of interest on traditional medicinal and conservation plants in Tobelo Dalam tribe culture

Most people of the Tobelo Dalam tribe still depend their lives on the wealth of biological resources around the TNAL area, both to meet the need for food and other necessities such as taking several plant species for treatment [21]. In general, the value of ICS describes the cultural value of the Tobelo Dalam community about the use of medicinal plant species in traditional medicine practices by considering the quality of use (q), intensity of use (i), and exclusivity/level of importance (e). To obtain ICS data, 9 resources persons were needed from the indigenous people of the Tobelo Dalam tribe in Ino Jaya Village who were selected based on their knowledge skills in understanding the use of medicinal plants. The results of the ICS assessment of various types of medicinal plants are presented in Table 2.

Tabel 2: Acquisition of ICS values of medicinal plant species used by the Tobelo Dalam tribe

No	Scientific name	Local name	ICS	Value category
1	<i>Ficus septica</i> Burm.f.	Bobuluturu	24	High
2	<i>Vitex cofassus</i> Reinw.	Kopasa	24	High
3	<i>Intsia bijuga</i> (Colerb.) O.K	Dowora/Kayu besi	24	High
4	<i>Alphitonia moluccana</i> T. & B.	Kayu Nututu	24	High
5	<i>Physalis peruviana</i> Linn.	Ego-egono	24	High
6	<i>Vitex</i> sp.	Kayu homoko	24	High
7	<i>Alpinia nutans</i> (L.) Roscoe	Goloba	24	High
8	<i>Arcangelisia flava</i> Merr.	Tali kuning	24	High
9	<i>Carica papaya</i> L.	Topaya	18	High
10	<i>Alstonia scholaris</i> R.Br.	Yangere/Kayu telur	18	High
11	<i>Saccharum officinarum</i> L.	Tobu merah	18	High
12	<i>Fibraurea chloroleuca</i> Miers.	Akar kuning	18	High
13	<i>Osmoxylon palmatum</i> (Lamk.) Philipson	Kayu toyomo	18	High
14	<i>Syzygium polycephaloides</i> Merr.	Kayu lipi-lipite	18	High
15	<i>Kleinhovia hospita</i> Linn.	Kayu dedoro	16	Medium
16	<i>Mallotus moluccana</i> Muell. Arg.	Tali pepewi	16	Medium
17	<i>Gossypium acuminatum</i> Roxb.	Kapasa	12	Medium
18	<i>Rhizophora conjugata</i> Linn.	Kayu soki	12	Medium
19	<i>Rhizophora</i> sp.	Babanga	12	Medium
20	<i>Macaranga tanarius</i> Muell.Arg.	Kayu hamehe	12	Medium
21	<i>Theobroma cacao</i> L.	Buah coklat	12	Medium
22	<i>Pisonia</i> sp.	Leleko merah	12	Medium
23	<i>Pandanus</i> sp.	Kokayu	8	Low
24	<i>Cinnamomum macrophyllum</i> Miq.	Behelo	8	Low

25	<i>Piper insignilimbun</i> DC.	Tali gugete	8	Low
26	<i>Musa</i> spp.	Bole/Pisang	8	Low
27	<i>Hemigraphis bicolor</i> (Bl.) Hall. f.	Gofuaerani	8	Low
28	<i>Allium sativum</i> L.	Bawanga putih	8	Low
29	<i>Allium cepa</i> L.	Bawanga merah	8	Low
30	<i>Randia oppositifolia</i> Koord.	Hamangau	8	Low
31	<i>Pinanga punicea</i> Merr.	Dipong/pinang	6	Low
32	<i>Cyperus rotundus</i> L.	Takiu	6	Low
33	<i>Citrus</i> sp.	Lemon	6	Low
34	<i>Artocarpus heterophyllus</i> Lamk	Stingki/Nangka	6	Low
35	<i>Commelina nudiflora</i> Linn.	Dobi-dobiki	4	Low
36	<i>Pimeleodendron amboinicum</i> Hassk.	Pokor-pokor	4	Low
37	<i>Musa</i> spp.	Totaleo mauru	4	Low
38	<i>Metroxylon sagu</i> Rottb.	Sagu	4	Low
39	<i>Aceratium</i> sp.	Kayu leleko	4	Low
40	<i>Myristica fragrans</i> Houtt.	Gohora	4	Low
41	<i>Lansium domesticum</i> Corr.	Langsa	4	Low
42	<i>Lunasia amara</i> Blanco	Kayu Pugu-pugutu	4	Low
43	<i>Castanea acuminatissima</i> Bl.	Kayu Ngofangoe	4	Low
44	<i>Myristica fatua</i> Houtt.	Leleko putih	4	Low
45	<i>Hibiscus rosa-sinensis</i> Linn.	Ubo-ubo	4	Low
46	<i>Osmoxylon umbelliferum</i> Merr.	Toyomo	4	Low
47	<i>Octomeles sumatrana</i> Miq.	Kapu	4	Low
48	<i>Croton hirtus</i> Herit.	Cade-cade	4	Low
49	<i>Caryota rumphiana</i> Mart.	Akar baru	4	Low
50	<i>Mangifera odorata</i> Griffith	Kweni	4	Low
51	<i>Piper betle</i> L.	Bidoho/sirih	4	Low
52	<i>Adenostemma lavenica</i> (L.) O.K.	Boboko	4	Low
53	<i>Ficus adenosperma</i> Miq.	Tataulu	4	Low

Description. ICS = Index of Cultural Significans; q = quality; i = intensity; e = exclusivity

Table 2 provides information that there are 14 species of medicinal plants (26.4%) belonging to groups of plants that have high ICS values (17-24). Some usages of medicinal plant species indicate that these species cannot be replaced by other species, the species in question are *Ficus septica* Burm.f., *Vitex cofassus* Reinw., *Intsia bijuga* (Colerb.) O.K., *Alphitonia moluccana* T. & B., *Physalis peruviana* Linn., *Vitex* sp., *Saccharum officinarum* L., and *Arcangelisia flava* Merr. The eight species of medicinal plants have a relatively frequent use intensity which is experienced by more than half the number of people with relatively high levels of need. Some diseases related to these plant species, such as coughing, back pain (aches), chills, headaches, and scratched wounds. In the

medium category ICS value (values between 9-16) is occupied by 8 species of medicinal plants (15.1%), of course these conditions will correlate with some diseases that are not too often experienced by 10-50% of the community, and the type of disease among them the ingredients used after childbirth, toothache, body heat, and ulcers. The species of medicinal plants included in the category of low ICS values (values between 4-8) amounted to 31 species (58.5%), which means that the intensity of the use of these species is relatively rare, ie less than 10% of the population. The types of diseases that rarely occur in the community and correlate with the plants used are syphilis, seizures in children under five, stepped down skin disease, and jaundice. The Tobelo Dalam community uses plant materials as traditional medicinal ingredients taken from the TNAL forest area. In general, the community tends not to carry out traditional conservation to preserve the preservation of medicinal plant species that have been used to avoid extinction. But indirectly ecosystem-based conservation has been carried out by the Tobelo tribe group. For example, in the form of a ban on entering the Gosimo forest [33], the prohibition on taking biological resources in the Matakau forest [33], is recommended to plant one species of tree for each newborn or deceased family member so that they mention it by the name of the birth tree and the death tree [34]. The reason for not doing traditional conservation is because the community does not have the knowledge and understanding of the importance of the sustainability of the use of medicinal plant species for the offspring generation. In addition, they also do not understand the meaning of the existence of TNAL forests for the benefit of species and ecosystem conservation (92% of respondents support it). The mindset and perception of the community are still rests on the supply of various plants including medicinal plants in the TNAL area which are available quite a lot and are easy to get. If this condition continues all the time, it is feared that it will erode the existence of various species of medicinal plants in TNAL forests becoming increasingly vulnerable and threatened in number [35], moreover the area is known as a conservation forest area that focuses on endemic plant species [2]. Therefore, it is expected that it is time to immediately conserve species by involving the role of the Tobelo Dalam community in the research location to protect the over-exploitation of medicinal plant species [36,37].

3.4 Conclusion

The social life of the Tobelo Dalam tribe, in the Ino Jaya Village is inseparable from its dependence on the wealth of biological resources that exist in the environment where they live. Referring to the acquisition of field data, it is concluded that:

The number of medicinal plant species used by the Tobelo tribe In as many as 53 species belonging to 45 clan and 35 tribes, among the various species of medicinal plants recorded, there is also one species of Vertebrate animal (*Euplexaura antipathies*). And the number of types of diseases found in the lives of Tobelo Dalam people as many as 30 species who are not at high risk of death. Then some ways of processing traditional medicine in this community are relatively simple, namely by boiling or soaking warm water, burning, kneading or pounding, there is even a way to sit it. The results of the ICS assessment indicate that 26.4% belonged to a group of plants with high ICS values (17-24), 8 species (15.1%) classified as moderate ICS, and low ICS values were 31 species (58.5%).

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