

Ethnopharmacology studies of jaundice in Mandar tribe in Pasangkayu district of West Sulawesi

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Abstract

Mandar tribe in Pasangkayu Regency still use plants for traditional medicine. One of the diseases that can be treated with traditional medicine is jaundice. This study aims to determine the utilization of traditional medicine as jaundice by Mandar tribe. This type of research is descriptive qualitative with sampling technique Snowball Sampling through interview with media questionnaire. The results of the study found 14 species consisting of 13 families, plants for treatment of jaundice is soursop, breadfruit, black turmeric, mung, turmeric, banana, kersen, reed, lemon, sambiloto, yellow root, lapo-lapo, barorang, and coconut. Parts of plants used by the Mandar, among others, other leaves, fruit, stems, roots, rhizomes, herbs. Part of the most widely used plant as a drug that leaves with a percentage of 43%. Processing plants by boiling 70%, how to squeeze 30% and consumed by way of drinking.

Keywords: Ethnopharmacology, Jaundice, Mandar tribe, Pasangkayu regency.

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1. Introduction

Ethnopharmaceutical is part from science treatment community often traditional proving non-empirical and if it has through proofs scientific could found or developed compound new drug. Ethnopharmaceutical covers study of ethnobotany, ethnozoology, ethnopharmacognosy, ethnopharmasetik, and ethnopharmacology. Ethnopharmacology is scientific studies connecting an ethnic group, health, and how customs are related with physical condition of making and using drugs [1]; A very useful step for exploring local tribe knowledge on traditional medicinal prescriptions with a range of scientific approach. One of them approach is ethnopharmaceutical. In this research, is carried with ethnopharmacology approach that include all information about plants that have pharmacological effect that are used as medicine or herbs produced by local people.

Ethnopharmacology and ethnopharmaceutical research has applied in some areas in Indonesia, including ethnopharmaceutical research on Mandar tribe in Pamboang District Majene West Sulawesi [2], Buton tribe in Binongko Sub district Wakatobi district Southeast Sulawesi [3], and Kaili Moma Tribe in the Kulawi Sub district Sigi district [4]. While for ethnopharmacology research that is in Sundanese tribe in Sukabumi Subdistrict, Sumedang, Cimahi, Tasikmalaya, Indramayu, Garut in West Java Province about dislipidemia disease [5], and Mandar tribe in Lara village, Karossa sub-district, Mamuju district about Malaria disease [6]. From the research data above shows that there are still many regions or ethnic groups in Indonesia that need to be studied especially in West Sulawesi.

People in the Province of West Sulawesi, especially in Pasangkayu District have customs on treating illnesses by visiting modern health services like as community health centers, hospitals, practicing doctors, and using traditional treatment. There are still many people who use traditional treatment, showing the strong tradition of community in use traditional drug [7]. Mandar Tribe is one of a local tribe in the Pasangkayu District administratively located in 12 subdistricts namely Sarjo, Bambaia, Bambalamotu, Pasangkayu, Pedongga, Tikke Raya, Baras, Sarudu, Lariang, Dapurang and Bulu Taba [8].

Jaundice is the presence of excess bilirubin in the blood circulation and the accumulation of skin pigment, mucous membrane and eyeball (in the sclera layer) [9]. The cause of jaundice is a disorder in liver organ such as hepatitis virus, cirrhosis, alcohol and bile drugs **Error! Reference source not found.** According to World Health Organization (WHO) [10] in 2013 liver disease (liver) is one of the 10 largest diseases of death in Indonesia. Liver disease patients in Indonesia is estimated to reach 28 million people, in every 10 people of Indonesia, there are more than one person with liver disease. According to obtained data from the Record of Medical General Hospital (RSU) in Pasangkayu, in 2014 the incidence of patients with jaundices as much as 7 cases increased in 2016 to 20 cases.

Therefore, the researcher is very interested to conduct research of Ethnopharmacology study on Mandar tribe in Pasangkayu regency of West Sulawesi Province so that the preservation of knowledge and the use of traditional medicine is maintained and can be used as a new

development in the field of health about the use of plants as new medicinal materials.

2. Materials and methods

This research is descriptive research using semi-structured interview method with questionnaire. Then the collection of specimens taken directly from the location of the growth with the help of informants, specimens obtained is identified in the Biodiversity Laboratory Department of Biology Faculty of Mathematics and Natural Sciences, Tadulako University. Further obtained data from the interview will be displayed in the form of diagrams and percentage.

The sampling technique is *snowball sampling*. In the determination sample, first selected one sample person, because the data is not complete yet, the researcher looks for other people who are considered more know and can complete the data given by the previous sample [12].

Data collected using semi-structured interview method using interview guide in the form of questionnaire [13]. From field studies conducted, informants were asked about local names, organs used and how to use these plants as medicine in curing a disease.

Information obtained by Stationery, informative questionnaire sheet, scissors, raffia strap, documentation tool (camera and voice recorder). Alcohol, newspapers, cotton, dos and plant samples obtained.

3. Results

The results of data obtained by informant Mandar tribe in Pasangkayu district as much as 7 people with varying profession and gender. (Table 1)

Table 1: The Mandar Tribe in the District of Pasangkayu, West Sulawesi Province

No	Name of Informant	Age	Gender	Address	Work
1	Harman	45 years	Male	Hikmah Hamlet, Kemiri alley, Bambalamotu sub district.	Farmers
2	Sape	50 years	Male	Sarasa Village, Dapurang subdistrict.	Fishermen
3	Hj. Samsul	60 years	Male	Bambaloka Village, Baras subdistrict.	Fishermen
4	Sitti Aminah	50 years	Female	Sp 4 Market Complex, Lilimori Village, Bulutaba Subdistrict.	Masseus
5	Sukriadi	40 years	Male	Polewali Village, Hikmah Hamlet, Bambalamotu Subdistrict.	Farmers
6	Nurdin	52 years	Male	Balabonda, Sarjo Subdistrict.	Farmers
7	Rahman	55 years	Male	Parahyangan Hamlet, Malei Village Pedongga Subdistrict.	Teacher

Results of Plant Identification Specimen have been done in "Biodiversity Laboratory" Department of Biology Faculty of Mathematics and Natural Sciences, Tadulako University. The number and percentage of plant inventory

used as traditional medicinal material by Mandar tribe in Pasangkayu regency West Sulawesi Province can be seen in Table 2.

Table 2: Number of Plants Utilized as Traditional Medicines by the Mandar Tribe in Pasangkayu Regency, West Sulawesi

No	Common Name	Species	Family	Benefits	Chemical compounds
1	Breadfruit	<i>Artocarpus altilis</i> (Parkinson ex FAZorn) Fosberg	Moraceae	Liver disease, hypertension and diabetes.	saponins, hydrocyanic acid, polyphenols, acetylcolins, ribovlavins, phenols, flavonoids and tannins [14]
2	Yellow Wood	<i>Arcangelisia flava</i> (L.) Merr.	Menispermaceae	Jaundice, intestinal worms, strong medicine, peluruh menstruation and sprue.	Alkaloids, flavonoids, saponins and tannins [15]
3	Alang-alang	<i>Imperata cylindrica</i> (L.) Raeusch.	Poaceae	Drugs of fever, hypertension, cough, and jaundice.	water, carbohydrates, fiber, monitol, compound K, sakarosa, glucose, malic acid, citric acid, arundoin, cyllindrin, ferenol, simiarenel, anemonin and flavon [16]
4	Black Turmeric	<i>Curcuma aeruginosa</i> Roxb.	Zingiberaceae	Anti-inflammatory, skin diseases, cough, asthma and antioxidants.	Essential oils, kurkuminoid (kurkumin), alkaloids, saponins, starch, resin or sap, and fat[13]
5	Turmeric	<i>Curcuma longa</i> L.		Antioxidants, antitumors, anticancer, antifungals, antimicrobials, and anti-toxins.	Essential oils, curcuminoids, phenols, terpenoids, flavonoids[17]
6	Sambiloto	<i>Andrographis paniculata</i> (Burm.f.) Ness	Acanthaceae	Fever, dysentery, rheumatism, tuberculosis, gastrointestinal infections, shortness of breath and to improve liver function.	Andrographolide, neoandrographolide, dehydroandrographolide and homoandrographolide. In addition, there are also flavonoids, alkane, ketones, aldehydes, minerals, and resin[18]
7	Kelor	<i>Moringa oleifera</i> Lam	Moringaceae	Jaundice, rheumatism, allergies, antibacterial, urinary tract infections, diabetes, colitis, diarrhea, dysentery.	Flavonoids, alkaloids, and phenols [19]
8	Soursop	<i>Annona muricata</i> L.	Annonaceae	Hypertension, hepatitis (jaundice), coughs.	Flavonoids, triterpenoids, saponins, tannins and polyphenols[20]
9	Orange	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Rutaceae	appetite enhancer, diarrhea, antipyutitics, antiinflammatory, antibacterial and diet.	flavonoids, saponins and essential oils [21]
10	Cherry	<i>Muntingia calabura</i> L.	Muntingiaceae	Diabetes, headache, anti-inflammatory and jaundice.	Flavonoids, tannins, glycosides, saponins, steroids, and essential oils [22]
11	Banana	<i>Musa acuminta</i> Colla	Musaceae	Jaundice	Water, fiber, saponins, anthraquinone, quinone, potassium, phosphorus and iron [23]
12	Lapo-lapo	<i>Melanolepis multiglandulose</i> (Reinw. Ex Blumea) Rchb. & Zoll.	Euphorbiaceae	bone pata drugs, skin diseases and hives, and headaches.	flavonoids, saponins and alkaloids [24]
13	Barorang	<i>Blumea balsamifera</i> (L.) DC	Asteraceae	Rheumatic joints, menstrual pain, influenza, fever, spasms, breath (asthma), cough, bronchitis, stomach kem, bung, diarrhea, stomach heartburn, canker sores, and urinating, sweet (diabetes mellitus).	Tanin, falavonoid and saponin [25]
14	Coconut	<i>Cocos nucifera</i> L.	Arecaceae	Jaundice	-

The result of data percentage of medicinal plant organs utilized by Mandar Tribe in Pasangkayu district West Sulawesi Province was shown in Figure 1.

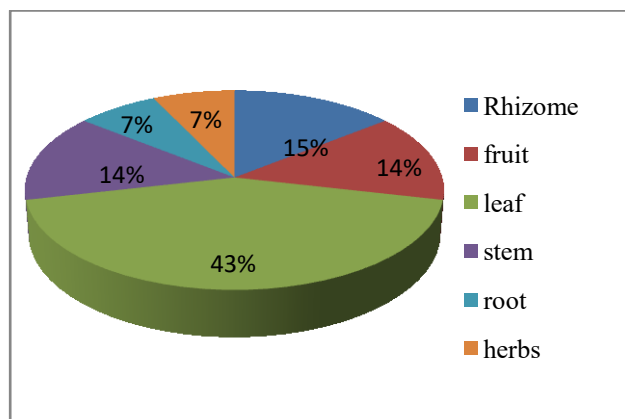


Figure 1: Percentage of Medicinal Plant Organs Utilized by Mandar Tribe In Pasangkayu District.

Description:

Part of the plant used by Mandar Tribe is stems 14%, 7% roots, 7% herbs, 15% rhizome, 14% fruit, 43% leaf.

The result of data percentage to process plants as a drug used by the Mandar tribe in Pasangkayu district West Sulawesi Province. (Figure 2)

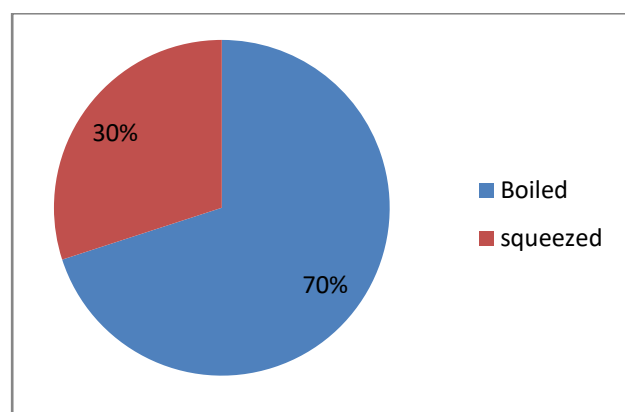


Figure 2: Percentage to Process Plant as a Drug Used by Mandar Tribe in Pasangkayu District.

Description:

Getting treatment plants often use by Mandar Tribe is squeezed 30%, boiled 70%.

Based on the result of an interview within for man Mandar Tribe in Pasangkayu District obtained in people have Jaundice .This is the list of Symptoms Patients have Jaundice. (Table 3)

Table 3: This is the List of Symptoms Patients Have Jaundice

Symptoms of Jaundice according to Mandar tribe
yellow body
abdomen enlarged
The stomach feels bloated
urine is yellow,
hot inside
Fever
Respiratory is not smooth
Limp
nauseous vomit
headache
and no appetite

4. Discussion

This research is a descriptive research that aims to know the types of medicinal plants, the way of processing and how to use drugs in the Mandar tribe that used as a traditional medicine for jaundice. Mandar tribe has a model of curing diseases with non-medical referrals or beliefs that they profess that is taught by Rasulullah SAW, Al-Quran and As-Sunah and hereditary experience. In the treatment of the Mandar tribe tends to recite the holy verses of the Qur'an into the water and pray for it, but there are some people who use the plants in healing the disease as traditional medicine [6].

The process of treating illness, recovery and maintenance with traditional knowledge of Mandar tribe has been going on since long before the existence of formal health service or can be said from generation to generation from their ancestors. Therefore, it is very important that the traditional medicine of these medicinal plants can be developed in the life of the community with more modern methods of treatment.

Mandar tribe community in Pasangkayu Regency still uses medicinal plants as traditional medicine although the fact there is not yet about the traditional treatment method done by physician. Trust and beliefs are a major factor in traditional medicine practiced by physicians.

Based on the results of interviews with the Mandar tribe in Pasangkayu, the cause of jaundice is irregular eating patterns and foods that are not hygenis, fatigue, likes to stay awake, and witchcraft. Symptoms of diseases complained by people suffering from jaundice have some similarities to the symptoms described by Suminar [26], namely fever, chills, flu, abdominal pain, weight loss and skin discoloration .

According to informant who used medicinal herbs to treat jaundice can prove that the herb can treat jaundice without consuming chemical drugs.

In the treatment, the Mandar tribe in Pasangkayu district using a variety of medicinal plants that are believed to hereditary can treat jaundice. Without knowing the chemical content and how the mechanism of the chemical components of plants so that it can treat jaundice. Gynecology chemistry and mechanism work component chemistry plant drugs used for treat jaundice on tribe Mandar district Pasangkayu West Sulawesi that is as the following:

Breadfruit (*Artocarpus altilis* (Parkinson ex FAZorn) Fosberg)

The leaves of breadfruit plants (*Artocarpus altilis* (Parkinson ex FAZorn) Fosberg) contain several substances such as hydrocyanic acid, acetylcholine, tannin, riboflavin, phenol, flavonoid, and saponin [27]. Breadfruit leaf (*Artocarpus altilis* (Parkinson ex FAZorn) Fosberg) contains secondary metabolite compounds such as flavonoids [28]. Flavonoids have been known to have biological activity as anti-inflammatory, antioxidant, antiviral, hepatoprotective, anticancer [29]. Working mechanism of flavonoid compounds as natural antioxidants is by inhibiting lipid peroxidase and able to protect the antioxidant defense mechanism by increasing vitamin C absorption so as to prevent liver damage [30]. One of the jaundice pathophysiology is caused by viral infections, toxic reactions to drugs and chemicals.

Yellow Roots (*Arcangelisia flava* (L.) Merr.)

The yellow root or so-called yellow wood (*Arcangelisia flava* (L.) Merr.) Contains compounds such as alkaloids, flavonoids, saponins, and tannins [15]. In the community this plant is often used as an antibacterial, hepatoprotective and worm drug. The yellow root rod (*Arcangelisia flava* (L.) Merr.) Saponin compounds have biological activity as hepatoprotectors or liver protectors. The mechanism of action of saponin compounds as antioxidants to protect the liver by inhibiting the activity of cytochrome P-450 inhibitors and also as anti-inflammatory to inhibit the increase of AST (*Aspartate Transaminase*) activity and ALT (*Alanine Transaminase*) in blood serum [26].

Sambiloto (*Andrographis paniculata* (Burm.f.)

Sambiloto (*Andrographis paniculata* (Burm.f.) Nees contains a variety of lactone active substances consisting of deoxyandrographolide, andrographolide, neoandrographolide, dehydroandrographolide and homoandrographolide, as well as flavonoids, alkanes, ketones, aldehydes, minerals and resins[18] Compounds that act as hepatoprotectors are andrographolide, the mechanism of action of these compounds can decrease lipid

peroxidation, increase the amount of glutathione, and increase the activity of antioxidant enzymes [31].

Kelor (*Moringa oleifera* Lam)

Kelor (*Moringa oleifera* Lam), contains secondary metabolite compounds namely, flavonoids, alkaloids, and phenols [19]. Moringa leaf (*Moringa oleifera* Lam) contains flavonoid compounds that are antioxidants and hepatoprotectors. The mechanism of action of flavonoid compounds inhibits prostaglandin synthesis so that work as hepatoprotector decreases levels of SGOT (*Serum Glutamic Oxaloacetic Transaminase*) and SGPT (*Serum Glutamic Pyruvic Transaminase*) [32].

Soursop (*Annona Muricata* L.)

Soursop (*Annona Muricata* L.) Contains flavonoid compounds, triterpenoids, saponins, and polyphenols [20]. Soursop leaf (*Annona Muricata* L.) has secondary metabolite compounds such as flavonoids, saponins, tannins that are antioxidants that reduce the function of hepatic cells. Antioxidants stabilize free radicals by supplementing electron deficiencies possessed by free radicals, and inhibit the occurrence of a chain reaction of free radical formation which can cause oxidative stress caused by excessive accumulation of ROS inside the liver cells so that liver cell damage can be repaired [33].

Kersen (*Muntingia calabura* L.)

Leaf Kersen (*Muntingia calabura* L.) contains flavanoid tannin glycosides, saponins, steroids, and essential oils [22]. Leaves Kersen (*Muntingia Calabura* L.) is a plant that is commonly found in the community is known to be efficacious as a hepatoprotector and contains a natural antioxidant that is a flavonoid that serves to protect the cells and liver organ from free radicals [34]. Leaf *kernel antioxidant activity* (*Muntingia calabura* L.) containing flavonoids by directly capturing free radicals and inhibiting lipid peroxide decomposition [35].

From study literature they could seen that content component chemistry useful plant as drug traditional for treat jaundice are Flavonoids, saponins, andrographolide, and tannins. There are several types of plants such as reeds (*Impremata cylindrica* (L.) Raeusch.), Black turmeric (*Curcuma aeruginosa* Roxb.), Turmeric (*Curcuma Longa* L.), lime (*Citrus aurantiifolia* (Chirstm.) Swingle), Banana (*Moses acuminta* Colla.), Lapo-Lapo (*Melenolepis multinglandulosa* (Reinw. Ex Blumea) Rchb. & Zoll.), barorang (*Blumea balsamifera* (L.) DC) and Coconut (*Cocos nucifera* L.) the obtained data still minimal, so still need to do research more continue from the plant in its use as jaundice medicine. Plants that are widely used are breadfruit and yellow roots as seen from content component chemistry the plants are flavonoids and saponins. Flavonoids have the ability as a natural antioxidant by inhibiting lipid peroxidase as well as protect the antioxidant

defense mechanism so as to prevent liver damage [30]. Saponin has activity as a protector of the liver by inhibiting the increase of AST (*Aspartate Transaminase*) and ALT (*Alanine Transaminase*) [26].

According to the healer Mandar tribe, jaundice can heal within a period of approximately 1-3 months if often consume the herb and make a break. Jaundice can be solved with a total rest for 1-4 weeks, and generally can heal within 6 months [36]. The Mandar tribe utilizes plants as traditional medicinal inherited from the parents, and others are obtained through dreams. Treatment is an alternative treatment, where alternative treatment is done if there are patients, who do not go away after getting formal treatment at the Hospital, Puskesmas or have been taking synthetic drugs, then the patient came to the healers and the doctors do traditional medicine.

5. Conclusion

Based on the results of research then it can be concluded several things as follows:

- 1) The number of plants used as traditional medicinal materials by the Mandar tribe in Pasangkayu regency, West Sulawesi amounts to 14 species and 13 families.
- 2) The treatment of medicinal plants by the Mandar tribe to treat jaundice is 70% boiled and 30% squeezed.
- 3) Based on literature study in research related to treatment using plant as a jaundice medicine obtained chemical content that can help in the healing process of jaundice flavonoids in breadfruit, kelor, kersen and soursop, andrographolide compounds in plants sambiloto and saponin compound in yellow root plants .

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Conflict of interest

The author declares that there are no conflicts of interest.

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