



Knowledge Understanding and Utilization of Medicinal Plants by Local Community Tompu District of Kaili, Sigi Biromaru, Central Sulawesi

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Abstract

Kaili is one of the ethnic region in Central Sulawesi which saves a lot of cultural values and traditions. As a traditional community, their life is very dependent upon natural resources contained in the environment. They still have knowledge, traditional culture, treatment and utilization system against various types of plants. The purpose of the study was to examine the knowledge understanding and utilization of medicinal plants by local community Tompu District of Kaili. Data knowledge and utilization were collected through interview, literature study, exploratory survey methods, PEA (*participatory ethnobotanical appraisal*), questionnaire and from interviews with the informants. The results from interviews showed that of public knowledge is still based on the traditional concept. Based on the results identifications obtained by (90 species). As many as six species medicinal plants to often used the Tompu community are *Euphorbia hirta* L. *Phyllanthus niruri* L. *Ageratum* L. *Blumea conyzoides balsamifera* L. (DC). *Kleinhovia hospita* L and *Tabernaemontana pandacaqui*. The benefits of this research to the development of science is expected to be complete scientific data regarding the utilization of medicinal plants natural resources on Tribal society Kaili in Tompu.

How to Cite

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INTRODUCTION

Plants play an important role in human life as a supplier of plant material necessities such as food, clothing, and medicine. Every society in every region has been using a variety of useful plants in their environment. In Indonesia, medicinal use of natural materials has been done by the ancestors' and it has been passed down from one generation to the next. A study of the interrelationships and linkages between cultural communities with the use of biological resources has called ethnobotany (Nasab & Khosravi, 2014).

There are some researchers on knowledge of medicinal plants in Indonesia. The researchers also conducted a study and found the different types of potential medicinal plants. However, the existence of trends and public awareness on using natural medicine (back to nature) is an obvious fact that now people have started to gradually abandon the use of modern medicine. Local communities in district of Riau Province Pangean tribe utilizing plant of Zingiberaceae in everyday life as a traditional medicine (Hartanto et al, 2014). According to the evidence and some information, it showed that since ancient times, human beings are capable of treating a variety of diseases by utilizing the plant. Humans tend to mimic the behavior of animals regarding the use of plants including treatment. Even up to modern times humans still use animals to test drugs that were newly found (Yuniati & Alwi, 2010).

Local communities in Kaili tribe, Tompu, Central Sulawesi also have made use of plants as traditional medicine. This empirical knowledge and experience are basic information that should be explored and assessed to be developed and exploited, in particular to explore renewable ingredients. The use of medicinal plants and the perception of healthy and sick concepts are formed through a process of socialization that has been passed down from generation to generation which trusted and believed to be the source of truth (Rahayu et al., 2006). Tompu society is a traditional society with a lot of cultural values and unique traditions. Culture is seen from the form of a society that still relies on the utilization of natural resources. As the rural communities, they have a fairly good level of knowledge about the concept of healthy, sick, the cause of the disease and the utilization of the potential types of medicinal plants, and food. The knowledge of Tompu society about medicinal plants has been passed down from generation to generation and still maintained until now. Knowledge is seen as a form of culture and heritage that must be main-

tained and preserved. Therefore, traditional knowledge is not extinct. On this basis, it is necessary to do research aimed at assessing the knowledge of Tompu society in the utilization of medicinal plants traditionally.

METHODS

This study was conducted in January-May 2015. The research site was located in Tompu Loru and Ngata Baru Village, Biromaru District, Sigi, Central Sulawesi, Indonesia. There were 60 respondent of the study. The selection of the respondent based on the characteristics of the age between 20-50 years and above. The selection of respondents based on their status in society is obtained upon the recommendation of the customs and expert treatment. Educational level of respondents, in General, is still very low.

The research is divided into two stages. The first stage of the inventory level of public knowledge about medicinal plants using the method of the exploratory survey through *in deep* and *open ended* interviews from the informant (Jumari et al, 2012). Data supported a assessment approach with *Participatory Ethnobotany Appraisal Method* (PEA) that research get involved in the daily activities of the Community in Tompu (Martin, 2004). The second stage of the activities utilization of medicinal plants which include head to the composition of the material using a semi-structured interview. Data of the all of the use medicinal plants is presented in tabulated and analyzed the qualitative descriptive (Shanthi et al., 2014).

RESULT AND DISCUSSION

General state of research sites

Tompu is administratively located in two villages, i.e. Desa Loru and Ngata Baru with coverage area ± 6220.34 ha. Geographic position lies between $0^{\circ}50'$ - $0^{\circ}55'$ south latitude and $119^{\circ}58'$ - $120^{\circ}00'$ east longitude, the altitude is between 0-1750 meters above sea level. Tompu is within ± 12 km from the capital city of the Province and ± 15 km distance from the Capital District. The total population of Kaili tribe residing in Tompu in 2015 is around 359 people, which includes about 42 head of the family is Loru village and 52 families in Ngata Baru. Tompu people occupation and livelihood is farming, hunting and utilizing the forest products for particular purpose, for example using it as medical supplies. A health facility in this village is a community health clinic that is handled by midwives and nurses. Health

facility is intended to provide facilities for the local community in obtaining health care without reducing the role of local traditional medicine.

Level of Knowledge of Tompu Society about Medicinal Plants

Traditional knowledge and the use of plants by people in Tompu require in-depth assessment process. In fact, it has been proved that traditional knowledge contributes to the progress of science and technology (Jumari, 2012). According to Josi et al. (2004), it was found that local knowledge as a result of learning, thinking, and perception as well as the basis for estimating future events.

In general, the process of knowledge transfer of medicinal plants by the community in Tompu was done orally, secretly and closely. Not all people of Tompu in research sites have the same level of knowledge in the use of medicinal plants. According to Sando, the more it is influenced by education level, personal knowledge and the intensity of the use of medicinal plants, then more

the tendency of public knowledge about a many medicinal plants are also. Information knowledge of medicinal plants in the society can only be delivered and given to certain people, such as children and their families. Knowledge of society is the cultural heritage and traditions that must be maintained and kept confidential. Hariyadi, (2011) stated that the use of plants for traditional medicine in public still rely on legacy knowledge passed down through generations. The knowledge can be gradually eroded due to acceptance of each person that will be different in the transfer process of knowledge on the utilization of medicinal plants. Tompu society has a diverse knowledge level in the use of medicinal plants. It is influenced by a person's level of knowledge. In the process of transformation, Tompu society knowledge of medicinal plants is only revealed to those who are older as traditional leaders, *sando* or shaman, and members of his family who are believed to pass on this knowledge. The results showed that the 90 species of plants obtained were utilized by Tompu community (Table 1).

Table 1. Medicinal plant utilization category of Kaili Tribe in Tompu Village

Category of Disease		Composition		Organ	Concoction Technique	Usage
Type of Treatment	Local Name	Scientific Name	Family			
Treatment of diarrhea and constipation	Kaleta even	<i>Acalypha indicia</i> L.	Euphorbiaceae	Root	Boiling technique	Drink
Curing heartburn, anti-poison of insect bites, and traditional rituals materials.	Salembangu	<i>Ageratum conyzoides</i> L.	Asteraceae	Leaf	Boiling technique	Drink
Treatment of dysentery	Bealu	<i>Aleurites moluccana</i> Willd.	Euphorbiaceae	Bark	Mashing the bark, squeezing the water	Drink
Treatment of stomachache and digestive function	Sanggulera	<i>Averoa bilimbi</i> L.	Oxalidaceae	Leaf and fruit	Boiling technique	Drink
Treating diarrhea and other chronic diseases	Sivumboa	<i>Blumea balsamifera</i> (L.)DC.	Asteraceae	Leaf	Boiling technique	Drink
Helps the process of digestion and treatment of injuries	Toboyo	<i>Cucurbita muscata</i> L.	Cucurbitaceae	Flower	Boiling technique and then added by coconut water	Drink
Curing dysentery	Gampiasu	<i>Desmodium</i> sp.	Fabaceae	Leaf	Boiling technique	Drink
Curing dysentery, anti-poison, fever, and asthma.	Mantalalu	<i>Euphorbia hirta</i> L.	Euphorbiaceae	All parts	Boiling technique and then added by honey and milk	Drink

Category of Disease	Composition			Organ	Concoction Technique	Usage
Type of Treatment	Local Name	Scientific Name	Family			
Helps to treat constipation	Barudata	<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	Leaf	Boiling technique	Drink
Curing dysentery	Kalibau	<i>Hibiscus tilliaceus</i> L.	Malvaceae	Flower	Boiling technique	Drink
Curing diarrhea	Jono	<i>Imperata cylindrica</i> L.	Poaceae	Root	Boiling technique and then added by brown sugar	Drink
Curing stomachache and internal disease	Balaroa	<i>Kleinhovia hospita</i> L.	Sterculiaceae	Leaf	Boiling technique	Drink
Curing diarrhea and antimicrobial agent	Katumba	<i>Lantana camara</i> L.	Verbenaceae	Leaf and root	Boiling technique	Drink
Help to accelerate digestive system	Pala	<i>Myristica fragrans</i> Houtt.	Myristicaceae	Seed	Boiling technique	Drink
Curing diarrhea	Jambu Seed	<i>Psidium guajava</i> Linn.	Myrtaceae	Leaf	Boiling technique	Drink
Curing diarrhea, urolithiasis, fever, and cough	Panuntu	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	All parts	Boiling technique	Drink
Curing diarrhea and body warmers	Kayu lana	<i>Tabernaemontana pandacaqui</i> Poir.	Apocynaceae	Root	Boiling technique	Drink
Stamina booster	Enau	<i>Arenga pinata</i> (Wurmb).Merr.	Arecaceae	Plant fluids	Direct consumption	Drink
Stamina booster and detox agent	Kaluku	<i>Cocos nucifera</i> L.	Arecaceae	Plant fluids and bark	Direct consumption of plant fluids and bark is boiled	Drink
Stamina booster and detox agent	Sikuri	<i>Kaempferia galanga</i> L.	Zingiberaceae	Rhizome	Boiling technique	Drink
Energy source, staple food, cosmetics and traditional ritual material	Pae	<i>Oryza sativa</i> L.	Poaceae	Seed	Grinding and boiling technique	Eaten
Stamina booster	Usuli	<i>Talinum paniculatum</i> Gaertn.	Portulacaceae	Root	Boiling technique	Drink
Stamina booster and detox agent	Kula	<i>Zingiber officinale</i> Roxb.b.	Zingiberaceae	Rhizome	Boiling technique, then added sugar, honey and egg	Drink
Appetite enhancer for children	Balantua	<i>Alpinia galanga</i> L. Swartz.	Zingiberaceae	Rhizome	Boiling technique	Drink
Immune system booster	Banggudu	<i>Morinda citrifolia</i> L.	Rubiaceae	Leaf and fruit	Grating and squeezing technique	Drink
Diabetes prevention	Pinahong	<i>Anredera cordifolia</i> (Ten.) Steenis.	Basellaceae	Leaf	Boiling technique and then added by honey	Drink

Category of Disease		Composition		Organ	Concoction Technique	Usage
Type of Treatment	Local Name	Scientific Name	Family			
Diabetes prevention	Mimba	<i>Azadirachta indica</i> (Blume) Miq.	Meliaceae	Leaf	Boiling technique	Drink
Diabetes wound healing	Kunilola	<i>Curcuma domestica</i> Val.	Zingiberaceae	Rhizome	Roasting and grinding technique, added by onion and sugar	Affixed
To reduce blood sugar level	Kayu momi	<i>Cinnamomum zeylanicum</i> Bl.	Lauraceae	Bark	Boiling technique	Drink
To reduce blood sugar level	Tabaro	<i>Metroxylon sagu</i> Rottb.	Arecaceae	Sago	Mashing and Boiling technique	Eaten
To reduce blood sugar level	Dale	<i>Zea mays</i> L.	Poaceae	Seed	Together with rice, the seed is washed and then boiled	Eaten
To cure skin ulcer	Kaki Kuda	<i>Centella asiatica</i> (L) Urb.	Apiaceae	Leaf	Grinding technique	Affixed
To cure skin ulcer	Lanjima	<i>Purtulaca oleraceae</i> L.	Portulacaceae	Leaf	Grinding technique	Affixed
To cure skin ulcer	Valampanga	<i>Physalis minima</i> L.	Solanaceae	Leaf	Grinding technique	Affixed
To cure skin ulcer	Sambirangi	<i>Zebrina pendula</i> Schnizl.	Comelinaceae	Leaf	Leaf + curcumin + sugar, grinding and boiling technique	Affixed
Urine flow enhancer	Salembangu	<i>Lamium</i> sp.	Lamiaceae	Leaf	Boiling technique	Drink
Urine flow enhancer, treat menstrual problems, circulatory system enhancer	Silevegie	<i>Fatoua pilosa</i> Gaud.	Moraceae	Root	Root + sugar + ash, Boiling technique	Drink
Urinal system functions maintenance	Kumis kucing	<i>Orthosiphon aristatus</i> Miq.	Labiataceae	All parts	All parts + 5 other species, Boiling technique	Drink
Urine flow enhancer	Pepedi	<i>Ruellia tuberosa</i> L.	Acanthaceae	Leaf	Boiling technique	Drink
Burns remedial	Pia lei	<i>Allium cepa</i> L.	Amaryllidaceae	Tuber	Tuber + sugar, mashing technique	Affixed
To cure bruise	Kolontigi	<i>Aglalia odorata</i> Lour.	Meliaceae	Leaf	Mashing technique	Affixed
To cure bruise in breast	Rarayo	<i>Cladodendron serratum</i> L.	Verbenaceae	Leaf	Grinding technique	Affixed
Burns remedial	Kadambuku	<i>Justicia gendarussa</i> Burm.f	Achantaceae	Leaf	Grinding technique	Smear
To cure cough up phlegm in children (expectorant)	Katimunda	<i>Abrus precatorius</i> L.	Fabaceae	Leaf	Leaf + cumin, mashing and squeezing technique	Drink

Category of Disease		Composition		Organ	Concoction Technique	Usage
Type of Treatment	Local Name	Scientific Name	Family			
Bad breath remover and curing the cough	Pia mputi	<i>Allium ascolonicum</i> L.	Amaryllidaceae	Tuber	Tubermashing and squeezing technique	Drink
Expectorant	Rayambone	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Leaf	Boiling technique, added by lime water	Drink
To cure tonsil irritation and cough up phlegm	Lemo nipis	<i>Citrus aurantifolia</i> (Christm.)Swingle	Rutaceae	Fruit	Squeezing technique added by ketchup and salt	Drink
To cure cough and sore throat	Paria	<i>Momordica charantia</i> L.	Cucurbitaceae	Leaf	Boiling technique	Drink
To cure cough	Timbaya	<i>Solanum rudepannum</i> Dunal.	Solanaceae	Leaf	Boiling technique	Drink
To cure headache	Sarikaya	<i>Annona squamosa</i> L.	Annonaceae	Leaf	Boiling technique	Drink
To cure headache	Kena	<i>Andrographis paniculata</i> Burn.f	Achantaceae	Leaf	Boiling technique	Drink
To cure headache	Tambajara	<i>Erigeron</i> sp.	Asteraceae	Leaf	Boiling technique	Drink
Fever healer and to cure internal disease	Lengaru	<i>Alstonia scholaris</i> R.Br	Apocynaceae	Bark	Boiling technique	Drink
Fever healer	Kayu lei	<i>Bridelia</i> sp.	Phyllanthaceae	Leaf	Boiling technique	Drink
Fever healer	Maku	<i>Syzygium malaccense</i> (L.) Merr & Perry	Myrtaceae	Bark	Boiling technique	Drink
To cure skin ulcer and skin disease	Kamonji	<i>Artocarpus communis</i> J.R & G.Frost	Moraceae	Leaf	Immersion technique	Rubbed
To cure skin ulcer and skin disease	Roviga	<i>Calotropis gigantea</i> L.W.T.Aiton	Asclepiadaceae	Leaf	Mashing technique added by coconut milk	Rubbed
Anti-toxin	Gampaya	<i>Carica papaya</i> L.	Caricaceae	Leaf	Mashing and squeezing technique	Drink
Anti-toxin, condiment, and traditional ritual material	Tumbavani	<i>Cymbopogon citratus</i> (DC.) Stapf.	Poaceae	Stem	Boiling technique	Drink
Helps body as anti-toxinagent	Loka	<i>Musa paradisiaca</i> L.	Musaceae	Stem	Boiling technique	Drink
To reduce high blood pressure	Alpukat	<i>Persea americana</i> Mill.	Lauraceae	Leaf	Boiling technique	Drink
To reduce high blood pressure	Labu sia	<i>Sechium edule</i> (Jacq).Swarrt.	Cucurbitaceae	Fruit	Grating and squeezing technique	Drink
Facilitating breast-feeding and postpartum treatment	Gedi	<i>Abelmoschus manihot</i> L.	Malvaceae	Leaf	Boiling technique	Drink
Postpartum treatment	Asam jawa	<i>Tamarindus indica</i> L.	Caesalpiniaceae	Fruit	Immersion technique added by honey and egg	Drink

Category of Disease		Composition		Organ	Concoction Technique	Usage
Type of Treatment	Local Name	Scientific Name	Family			
To cure asthma	Taipa	<i>Mangifera indica</i> L.	Anacardiaceae	Bark	Boiling technique, added by ginger	Drink
To cure asthma	Loka Ibo	<i>Musa</i> sp.	Musaceae	Fruit	Mashing and squeezing technique	Drink
To cure asthma	Sirih hutan	<i>Piper caducibracteanum</i> C.DC	Piperaceae	Leaf	Boiling technique	Drink
To reduce gastric acid	Karyango	<i>Acorus calamus</i> L.	Araceae	Rhizome	Grinding and squeezing technique	Drink
To cure stomach ulcer	Tabanjaia	<i>Erigeron sumatranensis</i> L.	Asteraceae	Bark	Boiling technique	Drink
To cure stomach ulcer	Kayu Jawa	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Bark	Boiling technique, added sugar	Drink
To cure toothache	Tavumboa	<i>Crinum asiaticum</i> L.	Amaryllidaceae	Root	Mashing technique	Affixed onto ache tooth
To cure a toothache and traditional ritual material	Kulalo	<i>Jatropha curcas</i> L.	Euphorbiaceae	Sap	Direct consumption	Dropped onto ache tooth
Joint pain treatment	Rica jawa	<i>Piper nigrum</i> L.	Piperaceae	Seed	Mashing technique added by egg	Drink
Rheumatic pain treatment	Sibalaya	<i>Sida acuta</i> Burm.f.	Malvaceae	Leaf	Boiling technique	Drink
To cure earache	Tara	<i>Ananas comosus</i> L. Merr.	Bromeliaceae	Fruit	Grating and squeezing technique	Dropped into ache ear
To cure jaundice	Valangguni	<i>Arcangelisia flava</i> L. Merr.	Menispermaceae	Root	Boiling technique	Drink
Throat soothing	Tamadia	<i>Artemisia vulgaris</i> L.	Asteraceae	Leaf	Mashing and squeezing technique	Drink
To cure internal disease	Baliura	<i>Begonia</i> sp.	Bignoniaceae	Leaf	Boiling technique	Drink
To cure impotence	Patoko	<i>Eleusine indica</i> L.	Poaceae	Leaf	Boiling technique	Drink
Fever healer	Siranindi	<i>Kalanchoe pinnata</i> Pers.	Crasulaceae	Leaf	Mashing and squeezing technique	Drink
To cure scabies	Paria hutan	<i>Momordica balsamina</i> L.	Cucurbitaceae	Leaf	Mashing technique, added by brown sugar	Smear
To cure sore eyes	Kelo	<i>Moringa oleifera</i> Limk.	Moringaceae	Leaf	Immersion technique	Dropped onto eyes
To cure TBC	Botedala	<i>Tournefortiasp.</i>	Boraginaceae	Leaf	Boiling technique	Drink
To cure vaginal discharge	Sirih	<i>Piper betle</i> L.	Piperaceae	Leaf	Boiling technique	Drink

Category of Disease		Composition		Organ	Concoction Technique	Usage
Type of Treatment	Local Name	Scientific Name	Family			
To kill <i>Tinea vesicolor</i> (skin fungus)	Kayu manuru	<i>Senna alata</i> L.	Fabaceae	Leaf	Mashing technique	Rubbed
To reduce high level of uric acid	Silaguri	<i>Sida rhombifolia</i> L.	Malvaceae	All parts	Immersion technique	Drink
Sore throat drugs	Calicope	<i>Syzygium cumini</i> L. Skeels.	Myrtaceae	Bark	Boiling technique	Drink
Anti-cancer	Pesumu	<i>Xanthosoma violaceum</i> L.	Asteraceae	Leaf	Boiling technique	Drink
Sedative drugs	Kalagi	<i>Zingiber montanum</i> (Link). Roxb	Zingiberaceae	Rhizome	Mashing and squeezing technique	Drink

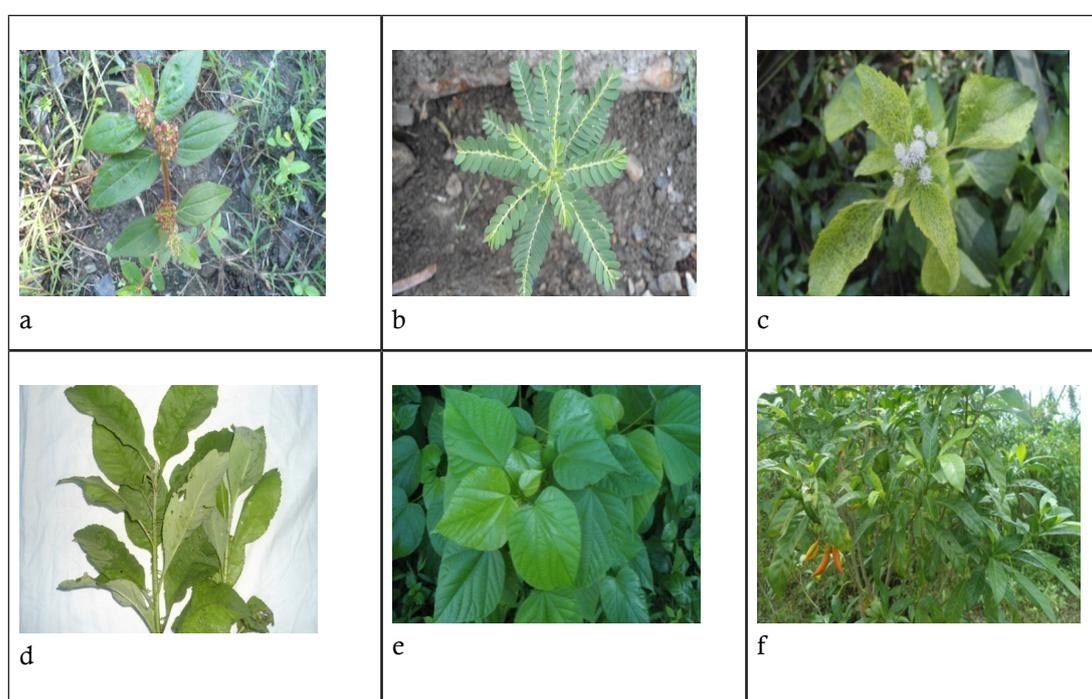


Figure 1. Species of medicinal plants that have been utilized by Tompu community (a). *Euphorbia hirta* L. (b). *Phyllanthus niruri* L. (c). *Ageratum conyzoides* L. (d). *Blumea balsamifera* (L.) DC. (e). *Kleinhovia hospita* L. (f). *Tabernaemontana pandacaqui* Poir.

Based on the interview results, it was known that there were several species with a high value of medicinal benefits in Tompu. Such as *Euphorbia hirta* L. has been used as anti-venom, fever, and asthma. *Phyllanthus niruri* L. has been employed to treat diarrhea, bladder stones, fever, and cough. *Ageratum conyzoides* L. as an anti-poison of insect bites and material for traditional rituals. *Blumea balsamifera* L. (DC). Has been applied for curing the diarrhea and another internal disease. *Kleinhovia hospita* L. also has been utilized to treat abdominal pain and internal disease medicine. *Tabernaemontana panda Aqu* has been applied to cope with diarrhea and body warmers

(Figure 1).

The use of Mantalalu (*Euphorbia hirta* L.) leaves has been aimed to overcome the symptoms of bladder stone disease, appendicitis, abdominal pain, diarrhea, anti-toxins, fever and asthma. The leaves are being cleaned and then it is coupled with 1 liter of water and then boiled. The boiled water is added to honey and chicken egg. In fact, according to *sando*, all parts of the plant can be used as a medicine and any plant species must be combined in pairs. The goal is that the properties will be more effective in curing the disease. This plant also has been widely used as a traditional medicine in countries which located in tropical

regions, such as Africa, Asia, South America, and Australia. In Chinese society, all parts of this plant are used to treat digestive disorders such as diarrhea, ulcers, heartburn and vomiting (Huang et al., 2012). Gayathri & Ramesh (2013) research results showed that the leaf extracts have antibacterial properties against pathogenic microorganisms.

Phyllanthus niruri L. is commonly used to treat diarrhea, as an antimicrobial agent, to cure bladder stones, cough, fever and diarrhea. The plant leaves are often used. The utilization of this plant consists of two, outer usage and inner usage. Leaves are grinded until finely ground and then compressed on the head, whereas the inner usage is by consuming it. Before consuming it, it combined with other plants and then boiled. Boiled water sometimes also used to treat ulcers. In Indonesia, *P. niruri* L. is one of the herbs that have been used for generations for the treatment of various diseases such as diuretics, antioxidant, antimicrobial, anti-inflammatory, anti-diabetic, antipyretic, appetite enhancer, heat in the stomach and tonic (Alegantina et al, 2014). According to Baskaran et al. (2010). *P. niruri* has several pharmacological properties that are used to treat lesions, urolithiasis, urinary tract infections and stomach diuretic. This plant also has been used since ancient times for treatment of jaundice and liver disorders.

Ageratum conyzoides L. or *salembangu* is one species that has important benefits for Tompu society. Leaves of this plant are used to cure cough, abdominal pain, internal medicine, sore throat, anti-toxin and wound healer. The leaves are boiled and then it is added to sugar and honey, then it directly consumed. Besides that, it is often used as ritual ceremonies of rice farming. At the open-

ing of the rice fields, *salembangu* is always placed in some corners of the farm. Based on the interview results with *sando*, it can remove pests for plant resignations. In India, people use this plant as anti-bacterial agent, anti-dysentery, and antilytic. While in Asia, South America and Africa, they use leaves of *A. conyzoides* to treat pneumonia, wound healing, treating fever, rheumatism, headaches and digestive disorders (Amadi, et al., 2012). Shekhar & Anju (2012) showed that almost all the parts of *A. conyzoides* components are alkaloids, flavonoids, tannins, saponins, glycosides, resin, and phenol functions as pharmacological activity and insecticide

Blumea balsamifera (L.) DC or *Sivumboa* is often used as a traditional medicine to cure diarrhea and other internal diseases. Usually, young leaves are chosen as drugs. Boiling method is applied to obtain decoction water. Decoction is let to stand for 15 minutes and then it consumed directly. Today, most people in Tompu have planted this species around their settlements. The leaves of *B. balsamifera* (L.) DC. were used by Sundanese people as an ulcer drug. Javanese people utilized it to overcome fever and malaria, and the community in Southeast Sulawesi, in Wawoni Island are using leaves of this plant for the treatment of postpartum and body warmers (Rahayu. et al. 2006). Local communities in Thailand and China use this plant for the treatment of wounds and kidney disorders. It also reported as an antifungal, antibacterial, antifebrile, coryza, fever, influenza and coughing (Lee, et al, 2012).

Utilization of *balaroa* (*Kleinhovia hospita* L.) as a traditional medicine by Tompu society, it used to treat stomachache and internal disease. The boiling technique is used for treating the leaves before consumption. It can be mixed with ot-

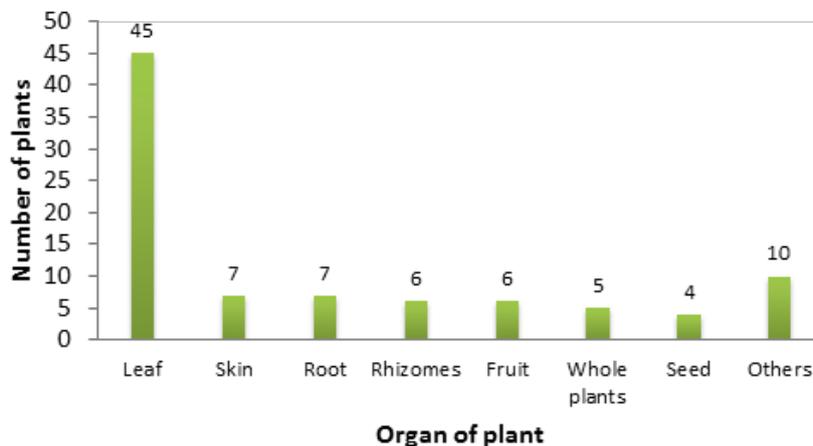


Figure 2. Amount of organ and part of plant for medicinal purpose in Tompu society

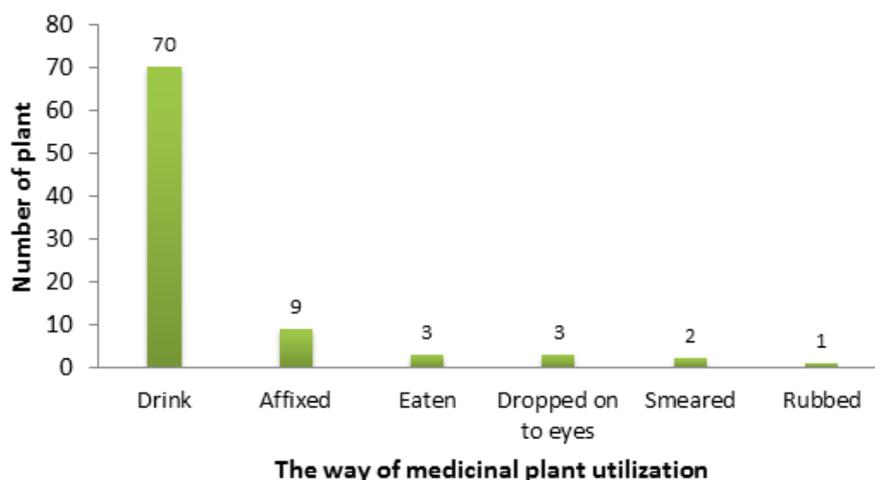


Figure 3. The way of medicinal plant utilization by Tompu community

her plants. Traditionally, this plant has been used as medicine by the general public, especially in the Southeast, Central and South Sulawesi. It is believed to have medicinal properties that can cure liver disease. Rahayu et al, (2006) stated that the leaves and bark of this plant contain cyanogenic compounds which are efficacious as a repellent of ectoparasites such as ticks. While the leaf extract has an anti-tumor activity.

Tabernaemontana pandacaqui Poir Poire plant is known as a major source of modern medicine. The root of this plant has been applied to treat diarrhea and as body warmers. In China and Thailand, this plant is a traditional medicine used for the treatment of fever, pain and dysentery (Pratchayasakul et.al., 2008). Based on the results of the study, it showed that leaf is the most widely utilized plant organ for drug formulation. It followed by bark and root and then flower and stem, respectively (Figure 2).

Part used include leaves, stems, tubers, roots, rhizomes, stems, bark, flowers, fruits, seeds, sap, the entire section. Overall plant organs which are often used by people Tompu as medicine are the leaves. According to *sando* leaves have a high level of effectiveness as drugs. Additionally leaf plant is part of the most numerous and easy to get. The leaves also have high regeneration for re-sprout and does not give a great influence on the growth of a plant even though the leaves is where photosynthesis (Anggana, 2011).

According to Tangjitman et al. (2015), the leaves are part of the plant used the most widely used as a traditional medicine in comparison with other parts. Many studies have been conducted in various regions also showed the dominance of leaf organs in the use of drugs. Leaves are the primary photosynthetic organs of plants

and is considered a key component of the natural pharmacy for the synthesis of bioactive components such as pharmacologically active ingredients which can be used to cure certain diseases. Tompu community usually uses the medicinal plants by direct and indirect consumption with pre-treatment before it. Herbal drink is the most popular form of consumption way.

Based on the interview results with treatment master, the popular way of medicinal treatment in Tompu society are divided into two. They are direct and indirect uses. Direct use is generally in the form of herbal drink, whereas the indirect use is in the form of rubbing method. The direct way using herbal drink is considered to be more effective to accelerate the healing process, and it is easier and practical to be applied to specific categories of the disease. An herbal drink made from the leaves is also reported as one of the practical ways in serving and using of medicinal plants that have been understood and applied by various groups of traditional society (Maroyi, 2013).

CONCLUSION

The management and the use of medicinal plants by Tompu community represented their knowledge of medicinal plant utilization. The level of knowledge of Tompu society was measured according to their understanding and views on cultural customs and traditions that have been passed down from ancestors through generations to generations. Based on the obtained results, from 90 species of medicinal plants, 18 of them were used to treat gastrointestinal problems by Tompu people. Tompu society uses medicinal plants in a way of **directly or indirectly applicati-**

on. People consume it directly by oral and use it indirectly by rubbing and affixing. The most used organ of the plant is the leaves. The benefits of this research to the development of science are expected to be complete scientific data regarding the utilization of medicinal plants natural resources on Tribal society Kaili in Tompu

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