

**ETHNOPHARMACOLOGY AND ACTIVITY DETERMINATION  
OF A PLANT IN MORONENE ETHNIC AT *TOBU* HUKAEA-LAEA  
BOMBANA-SOUTH EAST SULAWESI**

**ETNOFARMAKOLOGI DAN UJI AKTIVITAS SALAH SATU  
TUMBUHAN YANG DITEMUKAN DI SUKU MORONENE *TOBU*  
HUKAEA LAEA KABUPATEN BOMBANA SULAWESI  
TENGGERA**

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**ABSTRACT**

Tobu Hukaea-Laea is the only village that officially recognized in the National Park of Rawa Aopa Watumohai. People who lives in Tobu are native Moronene ethnic, they believed that they are the oldest ethnnc in South East Sulawesi. Their acknowledge of using plants medical plants are important to know and to publicate because the empirical experiences are valuable for developing new drugs. Based on ethnopharmacology study, there are 34 plant species' that being used as medical plant by people in Tobu Hukaea-Laea. One of the plants that have been determine its analgesic activity namely tokulo (*Helminthostachys zeylanica* L.) by Siegmund method. The results showed that the ethanol extract of leaves tokulo gave effect at 49 mg/kgbb.

**Keywords:** Moronene ethnic, ethnopharmacology, medicinal plant.

**ABSTRAK**

Tobu Hukaea-Laea adalah satu-satunya perkampungan yang diakui secara resmi berada di dalam kawasan Taman Nasional Rawa Aopa Watumohai (TNRAW). Masyarakat yang tinggal di *Tobu* ini merupakan suku Moronene asli. Pengetahuan mereka mengenai penggunaan tumbuhan obat penting untuk diketahui dan dipublikasikan, karena penggunaan obat secara empiris sangat berguna dalam penemuan obat baru. Berdasarkan hasil studi etnofarmakologi tercatat 34 jenis tumbuhan digunakan oleh masyarakat Tobu Hukaea-Laea sebagai tumbuhan obat. Salah satu tanaman telah diuji aktivitas analgesiknya, yaitu tokulo (*Helminthostachys zeylanica* L.) menggunakan metode siegmund. Hasil yang diperoleh, ekstrak etanol daun tokulo memberikan efek pada 49 mg/kgBB.

**Kata Kunci:** Suku Moronene, etnofarmakologi, tanamaman obat.

## INTRODUCTION

Ethnopharmacology derived from the Greek languages, *ethnos* which means the people and *pharmakon* which means drug. So ethnopharmacology defined as the study of plant which have pharmacological effect that related to the treatment and maintenance of health by a tribe. While ethnopharmacology study is defined as the study of usage of plants for treatment diseases by empirical experiences (Martin, 1988).

In many centuries, humans needs plant for food, medicine and other necessities (Flaster, 1966). This was proven by the discovery of a number of written documentation on that subject, such as pharmacology notes Egyptian "Ebers Papyrus" that was written about 1500 BC (Zhu, 1998), Chinese Herbs Traditional "Shen Nong Ben Cao Jing" (Cowan, 1994) or "Shen-Nong's Herbal Classics", and De Materia Medica that was considered in preparation of the modern pharmacopoeia (Melatoa, 1995).

The utility of traditional medicine do not only plays a role in treatment in the past, but also in today's healthcare system, especially in inland which is not covered by modernization. The absence of modern health facilities, lead people to do self treatment by exploiting the natural material. The traditional medicine begins with trial and error from generation to generation.

Indonesia has more than 500 entries in the socio-cultural category. Each entry varied and divided into ethnic categories, sub-tribes, the typical social groups, communities inhabiting the island, and others. Acknowledge of these tribes are different in using natural plants.

Tobu Hukaea-Laea is an old village with an area of tribal customs Moronene about 26295.32 ha (data from Participatory mapping-indigenous Hukaea Laea in 2000, then updated since June 2004). Tobu Hukaea-Laea is the only one village that officially recognized in National Park of Rawa Aopa Watumohai (TNRAW).

Moronene ethnic societies believe that they are the oldest ethnic in Southeast Sulawesi. Tobu Hukaea-Laea has its own unique and distinctiveness, because they are still very traditional society, which is not affected by the progress of modernization in surrounding of Moronene community. Their heritages included traditional knowledge in usage and managing forest products, plants that are edible, medicinal plants, poisonous plants, characteristics, names, and how to use the plants.

Tradition to use plants as traditional medicine has partially been verified, but there are still many that have not been recorded and disseminated through scientific publications. Therefore we need a scientific study about the existence of the utilization of traditional medicinal plants, especially in Indonesia. A scientific study on utilization of plants as medicine begins with a review of its utility in traditi

onal or ethnopharmacology followed by scientific testing in order to obtain evidence for its benefits as a traditional medicine. Based on scientific evidence, then the herb can be used rationally.

## MATERIALS AND METHODS

### **Ethnopharmacology**

This research sites in Tobu Hukaea-Laea, that located in the TNRAW, which using motorcycle 4 hours from kendari south East Sulawesi. Study site through a small path in the middle of the savanna and escorted by officers of TNRAW after permission was obtained.

This study uses exploratory survey and data collection by directly interview to shaman medicine or traditional leaders, as well as the surrounding communities that usually used this plants. The number interviewed people were 14 persons which 3 persons are shaman medicine (2 of them are male and female traditional leaders), 1 person is officers of park officials of Rawa Aopa Watumohai who knows a lot about medicinal plants, 10 persons are surrounding community of *Tobu* Hukaea-Laea.

Data was recorded in the form of table by the name of plant, parts of used, processing method, and benefits of its use. Once all the data have been obtained, the samples were collected. Sample collecting conducted by researcher accompanied by shaman medicine and officer of Rawa Aopa Watumohai. The collected samples were made in the form of dried plant collection, then its scientific name were determined in herbarium.

### **Activity Determination**

One of the plants were selected for activities determination. The plant that have been selected was Tokulo (*Helminthostachys zeylanica* L.). Tokulo leaves macerated using ethanol. The extract was made into 3 levels of dosages, 49 mg/kg bb, 98 mg/kg bw, and 196 mg/kg bb and Salisylic acid (65 mg/kg bw) was use for the comparison. Determination of analgesic was use Siegmund method which inducer was Acetic acid. Ethanol extract of tokulo were given orally in each group of mice in one hours before acetic acid were given intra peritonially. Writhing in mice was observed for 1 hour in every 10 minutes.

## RESULTS AND DISCUSSION

### **Ethnopharmacology Result.**

Some plant species that commonly used in treatment of various diseases in *Tobu* Hukaea-Laea can be seen in Table 1 below.

Table 1. Medicinal Plants used by Moronene Ethnic society that live in Tobu Hukaea-Laea

No	Local Name	Part Used	Applicarion methode	Benefits
1	Yellow root	Root	Wraps the root by cloth, dredgs, filter then dripps into the eye	Sore eyes
2	Starfruit <i>Averrhoa bilimbi</i>	Leaves	Rubbes Leave on the head while bathing	High blood pressure
3	Bila/Maja <i>Aegle marmelos</i>	Fruit	Rubb the endocarp on the skin	Itch, scabies
			Fills endocarp in betel, taken and smeared on the neck	Swelling
			Boils the fuit tahun add the leaves of komba-komba. Then drink water of it.	Diabetes
4	Butu-Butu	Leaves	Crushes the leaves then rubb it on the abdomen	Bloating
		Stem	Boil the water and then drink the water of it	Stomachache
5	Dandila <i>Lanata camara</i>	Root	Boil the Root, then drink the water of it	Cough
		Leaves	Heat the Leaves, then the rub of leaves is put on wounds	Wounds
6	Betel leaves <i>Piper betle</i>	Leaves	Heat the leaves over a fire, knead, the drop water that to the eye	Injury to the eye
7	Galisi	stem sap	Break the young stem sap, drops the fluid in the stem into the eye (white spots on irritated eyes)	Eye medication (to treat white spots on the irritated eyes)
8	Ikimko	Leaves	Boil the leaves then drink the water of it	Blood sugar disease
9	Kambabulongoa	Leaves	Heat th leaves above the smoke, after it wilting, affix it in to a swollen section	Swelling
10	Kayu Jawa	stem bark	Boils the stem bark, then drink	vomiting blood
11	Kayu Raja	Leaves	Boils the leaves then drink	To smoothen defecating and Peeing

No	Local Name	Part Used	Applicarion methode	Benefits
		stem sap	after it wilting, ffix it in to a swollen section	Wounds
12	Kateba	Leaves	Knead the leaves, then squeez the juice dripped to the wounds	Wounds
13	Kelapa	young leaves	Boils the young leaves than drink the water of it	high blood
		leaves	Smokes 7 leaves of it, than flick each leaf one by one close to nose	Treating bitter saliva, Smell rotten, bitter vomiting or yellow vomiting
		Lymph	Spread the lymph in to skin	Scabies
13	Kencur <i>Kaempferia galanga</i>	rhizome	Chopp the rhizome then squeeze	Ear infectiom
14	Kolobe	Endocarp	Grate the endocarp, then drink	Blood sugar disease
15	Komba-Komba <i>Eupatorium odoratum</i>	leaves	Knead the leaves, squeeze the sap of leaves then apply to wounds	Injury
16	Korowo	stem	Drink the stem water of it	Stomachache
17	Lomboraro	stem	Break up the stem in to 4 segments, then breathed into the ear	Clogged ear
18	Ntanga-Ntanga	Lymph	Drimp the lymph into the cavities tooth / pain	Toothache
19	Ombu	leaves	Boils the leaves, then drink the water of it.	Body odor, is used after childbirth
20	Paata <i>Eleusina indica</i>	leaves	Boils the Leaves , then drink the water of it	Stomachache
		Root	Wash the root was, clean and wrapps in banana leaves, then tied in the area that want to treated	Scabies
15	Komba-Komba <i>Eupatorium odoratum</i>	leaves	Knead the leaves, then squeeze the sap of leaves apply to wounds	Medicine
16	Korowo	stem	Drink water stem	Stomachache

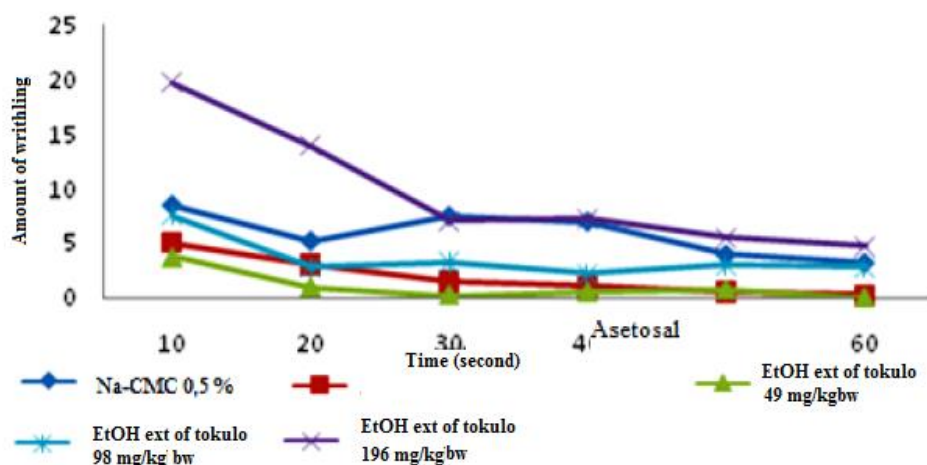
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		Root	Was the root, clean and wrapp in banana leaves, then tied in the areas you want treated	Scabies
21	Padamala (Serai) <i>Cimnopogon citratus</i>	stem	Tide the stem in bone fractures	Fractures (in order to quickly connect back)
22	Pati-Pati	leaves	Boils the leaves then drink	Stomachache
		stem sap	Drop the stem sap into the eye	Eye irritation
23	Pepaya <i>Carica papaya</i>	leaves	Boils the leaves, then drink the water of iy	Fever
24	Pisang <i>Musa paradisiaca</i>	young stems	Chew the young stem, after crushed attached to a dog bite marks	Dog bites
25	Rambega/Galingkan g	Leaves	Chops the leaves then , rub it into the skin	Skin fungus
26	Ririntokulo/Dopalias a	leaves	Boils the leaves , then drink the water of it	Jaundice
27	Sagu	Lymph	Rub the lymph directly on the red spots on the skin	Small red spots on the skin
		Sago	Soak the sago, then drink the upper water	Antidote
28	Sangi	Stem	Drink Water stem	Stomachache
29	Sirih Hitam <i>Piper betel var nigra</i>	Leaves	Boils the water Leaves, then drink the water of it	High glucose level
30	Srikaya <i>Annona squamosa</i>	Leaves	Boils the leaves were, then drink the water of it	Bone pain
		Fruit	Grate the fruit, then tap in to forehead	Fever
33	Tokulo <i>Kleinhovia hospita</i>	leaves)	Knead, squeeze water Squirt eyes	Headache

			as a food ingredient	High stomach acid level
34	Ubi Hutan <i>Dioscorea Hispida</i>	Bulbs	Processed as food (before processed ash is added then crushed, soaked for 2 days in drying for 3 days to eliminate the alcohol content contained therein	High glucose level



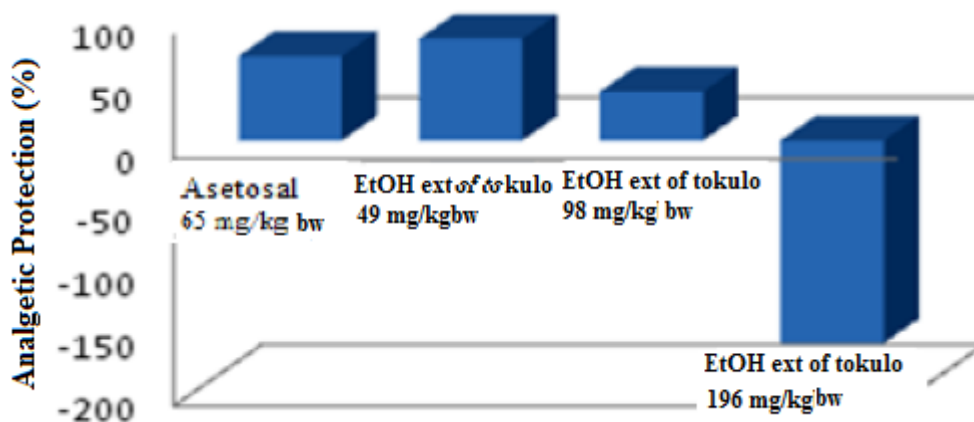
**Figure 1.** Medicinal plants use by Moronene Ethnic at Tobu Hukaea-Laea which scientific name are still undiscovered.

### Analgesic Activities Result.



**Figure 2.** Amount of writhing in each group of mice that were given 60 % of acetic acid

Based on the analysis using ANOVA followed using LSD, the result showed that there are a meaningful differences between a group with the dose of 196 mg/kg bw with other groups of dosage even with comparison group. Dosage of 49 mg/kg bw has a meaningful differences between control group (CMC-Na 0,5 %) but didn't with comparison group. It means dosage of 49 mg/kg bw has analgetic activity. Dosage of 98 mg/kg bw didn't show a meaningful differences with control group, it means this dosage doesn't have analgetic effect.



**Figure 3.** Graph of analgetic protection presentation of ethanol extract of tokulo leaves in mice that were induced by 60% of acetic acid.



Figure 3 shows the biggest analgetic protection gives at the dosage of 49 mg/kg bw and the lowest is give at the dosage of 196 mg/kg bw. Graphic in figure 3 also show greater the dose lower the effect even can give undesirable effects. According to information obtained, tokulo can treat headache but consuming it in a large amount can cause dizziness.

### **Disucussion.**

People who live in *Tobu Hukaea -Laea* is original Moronene ethnic without any assimilation with other ethnic. The social life of *Tobu Hukaea -Laea* is very simple. There is no development from the government in this area included the introduction of more modern society which makes it difficult to obtain proper health facilities

Peoples who lives in *Tobu Hukaea-Laea* usually used natural resources around the area to meet daily needs, especially in health care and treatment efforts.

Knowledge about the utility of plants in traditional medicine was obtained from generation to generation. The difficulty of obtaining healthcare, forcing people to remain preserve this tradition. This traditional treatment efforts of their usual medication independently or in shaman or traditional leaders who believed to have more knowledge in terms of the use of medicinal plants. One of medicinal plants that use for treat headache is tokulo. Based on scientific research, it proves than this plant has analgetic activity.

### **CONCLUSION**

Based on the exploration, it revealed that are 34 medicinal plants are used by Moronene ethnic at *Tobu Hukaea-Laea* as medicine. A plant namely tokulo has been determinated, and the result shows that analgetic activity arise at the dose of 49 mg/kg bw.

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