

Medical Plants in *Usadha*: *Loloh* as Balinese Medicine and Traditional Herbal Product in Educational Perspective

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Abstract— This research aims at conducting an investigation about medical plants written in *Usadha* manuscript (Balinese traditional healing text). The medical plants are ingredients for making herbal namely *loloh*. The sample was selected purposively from several sources. *Usadha* text about medical plants were analyzed by content analysis. The text data about *Usadha* was recorded from the traditional healers (*balian*) by using in-depth interviews. Data about potential consumers of the herbal medicine, *loloh*, were obtained from vocational school teachers and lecturers through questionnaire technique. Finding in this research is the enhancement of herbal *loloh* research not merely about the ingredients but also about the educational sight and the value of caring of the health of reproductive organs.

Keywords— *loloh*, medicine, herbal, education

I. INTRODUCTION

Traditional medical material is written in *lontar usadha* and has been used by *balian*'s to cure various diseases (Tantra and Rasna, 2017: 106). They are used as 1) *loloh* (herbal drink), 2) *boreh* (powder), 3) *tutuh* (drop), 4) *sumbuh* (spurt), and 5) *oles* (rub oil) [1], [2], [3], [4].

Since a long time ago, biodiversity has been used by our ancestors for medicine [5], [6]. However, the threat to natural resources caused by commercialization is much greater than that from the consumptive needs [7], [8]. This shows the little attention to medical plants [9]. This is confirmed in *Trubus Infolet Herbal Indonesia Berkhasiat*. It is said that there are only nine special quality plants that have been clinically tested, namely: *Indian bay leaf* (*Syzygium polyanthum*), green chiretta (*Andrographis paniculata*), turmeric (*Curcuma longa*), red ginger zingiber (*rubrum rhizoma*), bay cedar (*Guazuma ulmifolia*), Java ginger (*Curcuma zanthorrhiza*), common guava (*Psidium guajava*), Javanese long pepper (*Piper retrofractum* Vahl), and cheese fruit (*Morinda citrifolia*).

Bali knowledge about the varieties of medical plants, and human health and fitness is written in palm leaves manuscript entitled *Rukmini Tatwa*. The content of *Rukmini Tatwa* comprises the benefits of some medical plants, especially for the health of the reproductive organs. Some benefits namely to improve the function of female intimate organ, to enhance

the intercourse enjoyment, to look after the erectile capability of male intimate organ and also to improve the fertility. The knowledge of medical plants is becoming less known by people since the enthusiasm of learning and using the herbal medicine is also regressing day by day [4].

The simplicity of modern medicine causes a shift in popularity of the traditional medicines into the modern ones. This shift is caused by the regress of comprehending the palm leaves manuscript generally and sustaining the lexical of medicine plants [10], [11]. In other words, it can be said there is cultural erosion in Bali especially the knowledge about food plants and nutraceutical [12].

Indonesia is the second greatest country having various biodiversity after Brazil [13]. The existence of biodiversity as medicine has been known since thousands years ago [5].

Traditional healers use *Usadha* manuscripts as the reference for medical treatments. *Lontar usadha* consists of mantras, healing rituals, knowledge about leper especially the symptoms and the herbal ingredients used to cure it. *Usadha Rare* is written about some treatments for children. *Usadha Kuranta Bolong* contains the cure for babies and children. *Usadha Carken Tingkeb* contains types of medical plants; the content of *Usadha Tua* is about some diseases suffered by old people; *Usadha Dalem* contains treatments for internal disease; *Taru Pramana* is a knowledge about plants and the advantages; and *Tutur Buta Kecapi* contains about *balian*'s ethics [14], [15]. Formerly medical plants were used based on experiences [16]. *Serat Centhini* (1814) is a text about everything concerning Javanese community life, including traditional medical system. The system that has educational aspects.

II. METHODS

The data collection is obtained by recording and interviewing some teachers at vocational schools and lecturers. Besides interview technique, some literary studies are involved including the eighteen palm manuscripts, *lontar usadha*. Several traditional healers including three from lecturers were also involved as informants. They were interviewed through in-depth interview technique. The texts

about medical plants were analysed by using content analysis. There are three groups of data namely: interview text, questionnaires and writings.

The data about traditional healers were obtained through interviewing. The data about medical plants were obtained from literary studies. And the data about potential consumers of the herbal medicine, *loloh*, were obtained from vocational school teachers and lecturers through questionnaire technique.

III. RESULTS AND DISCUSSION

fruit (*Monrendi citrifolia*), 9) Betle leave (*Piper betel*), 10) Star fruit (*Averrhoa carambola*), 11) Brown rice (*Oriza sativa*), 12) Cinnamon (*Cinnamomum zeylanicum*), 13) Weedy rice (*Oriza satival F. gultinosa al auct*), 14) Pennywort (*Hydrocotile sibthorpsides lam*), 15) Blumea (*Blumea balsamifera DCF*), 16) Chinese keys (*Gasatrochilus panduratum ridl*), 17) Indian fleabane (*Pluchea Indica (L)*

3.1 Researches about loloh as Herbal Medicine

3.1.1 Research about loloh as Medicine

According to Tantra and Rasna [17] traditional drink in the form of *loloh* also serves also as medicine. Kinds of *loloh* namely 1) Greater galangage (*Kaempferia galanga L.*) 2) Wild ginger, *temutis (Curcuma purpurascens Bl.)*, 3) Wild ginger, *lempuyang (Zingiber zerumbet (L))*, 4) Fruit bearing (*Averrhoa bilimbi*), 5) Blumea, *Sambong (Blumea balsamifera D.C)*, 6) Ripening fruit, *kacemcem (Spondias pinata kurz)*, 7) Turmeric (*Curcuma domestica*), 8) Cheese

Lees), 18) Sugar apples (*Annona suquamosa L.*), 19) Garden shrub (*Graptophyllum pictum L.*, and 20) Cenfella (*Cenfella asiatica (L)*). The ingredients of *loloh* as herbal medicine are in Table I. The data are collected from traditional healers, those who are believed having ability to cure [18].

TABLE I. LIST OF MEDICAL PLANTS

No.	Name of medical plants	Scientific Name	Useful parts of plant	Indications (according to informants)		Composition
				<i>Usadha</i>	Traditional Healers	
1.	Greater galangage	<i>Kaempferia galanga L.</i>	Tuber/root	cough, rheumatism, itchy skin, babies' stomach ache	cough, rheumatism, itchy skin, stomach ache	Volatile oil with the components: Etil, metoksisinamat, etilsinamat, borneol, karbon
2.	Wild ginger <i>Temutis</i>	<i>Curcuma purpurascens Bl</i>	Tuber	joints swelling, difficulty urinating, cough, hard breathing in children, diarrhoea containing bloo	joints swelling, difficulty in urinating, cough, hard breathing	Volatile oil, champor, bereol (Suryadarma (2010: 301)
3.	Wild ginger, <i>Gamongan</i>	<i>Zingerber aromaticum vall</i>	Tuber	pain in the right part of stomach, drop in consciousness, swelling in legs, asthma, anemia	pain in the right part of stomach, drop in consciousness, swelling in legs, asthma,	Volatile oil, limonen and zirumen (Suryadarma, 2010: 301)
4.	Fruit bearing	<i>Averrho bilimbi L</i>	Flower, root, leave	heatiness, reddish faeces	heatiness, reddish faeces	Saponin, tahiurn, format acid, glucosada, ocsalad calcium (Hariana, 2009: 36) ^[19] ; Dalumarta,2008: 8 ^[20] . Fitol, Flavonoid tanin, citric acid, citric calium (Mun'im,201:3) ^[21]
5.	Blumea, <i>Sambong</i>	<i>Blumea balsami fera D.C</i>	Leave	urine problem (containing blood and pus) (Tengah,1995: 638)	urine problem (containing blood and pus)	Borneol, cineol, meal, eter, palmitinacid, (Septian, 2009: 232) ^[22]
6.	Ripening fruit, <i>Cemcem</i>	<i>Spondia pinata kur</i>	Leave, skin	<i>goiter</i> , Diabetes	<i>goiter</i>	--
7.	Turmeric, <i>Kunyit</i>	<i>Curceema domistica</i>	Tuber	fever, flu, rhematics, diarehea	fever, flu, rheumatic	Water, calorie, carbohydrate, protein, calcium, phosphorus, vitamins A<B,C, volatile oil, curcumin (Sejati, 2003) ^[23]

8.	Cheese fruit	<i>Morindi citrifolia</i>	Fruit, root	fever, lack of appetite	fever, lack of appetite	Root: Cepronacind, Carsilat acid, morindi, Leaf: protein, lime, iron, carotin (Hariana, 2009)
9.	Betle leave, Base	<i>Piper betle L</i>	Leaf	womb refresher, curing cough	womb refresher, curing cough	Volatile oil, cavical, carvocal, (Nuraimi, 2014 ^[24] , Elshabrana, 2013 ^[25])
10.	Star fruit, Belimbing	<i>Avverhoa carambola</i>	Leaf, stem	absces, goiter, urinary problem stomach ache	absces,goiter, urinary problem, stomach ache	Tanin, sufur, format acid, calcium ocsalat, (Nuraini, 2014: 16-170)
11.	Brown rice, Baas Barak	<i>Oriza sativa linn.F</i>	Fruit	lack of appetite, dry lips, diarhea, painful stomach, diarhea and bleeding, diabetes	lack of appetite, dry lips, diarhea, painful stomach, diarhea and bleeding, diabetes	Carbohydrate, protein, tiamin, low glicemic inde amino acid, iron, selenium fiber, vitamins B 6, phytochemical fenolat magnesium (Khalil, 2016: 49) ^[26]
12.	Cinnamon, Kayu manis	<i>Cinnamomun Zeylanicum Ness</i>	Tree, leaf	white mouth, dirty condition and infection, gout, stomach ulcer, gastric problem	white mouth, dirty condition and infection, gout, hernia, stomach inflammation, gastric problem	Volatile oil, tanin, resin, (Putra, 2014: 155) Sinamaldehyd 60-75%, sinamil acetat, cugenol 1-5 [^] , betha carotine 1-4%, linalso 1-35 (Mun'in, 2011:83)
13.	Weedy rice, Ketan gajih	<i>Oriza satvival F. Glutinosa alba Auct</i>	Grain	baby stomach disorder, suffering from intestinal worms lack of appetite, high fever, restlessness	baby stomach disorder, suffering from intestinal worms lack of appetite, high fever, restlessness	Protein 7.0 g, fat, 0.7t, carbohydrate,78.0 g, calsium 10.0 mg, fosfor, 148.0 mg, iron, 0.8 mg, vitamin B1 0.2 mg and water 13.0 mg (Khalil, 2016: 93)
14.	Pennywort, Sumanggigunung	<i>Hydrocotyle sibthrioides lain</i>	Leaf, stem root	cough with bleeding	cough with bleeding	coumarin, hiperin (Damartha, 2008: 159 -160 BS geuBm 1(2013: 327)
15.	Blumea, Sembunggantung	<i>Blumea Basamifera DCF</i>	Leaf	intestinal worms	intestinal worms	-
16.	Chinese keys, Temu Kunci	<i>Gastrochilus panduraum Ridl</i>	Tuber	dry cough, oral ulceration, urine problem, ringworm, gallstone, painful penis	dry cough, oral ulceration, urine problem, ringworm, gallstone, painful penis	Sineol, champhor, d-orneol d- pinen, sisquin torpen, zingiboon curcumien, zedoarin, amilum, resin) Tengah, 1995: 688-689) ^[26]
17.	Indian fleabane, Bluntas	<i>Pluchea Indicia (L) Lees</i>	Leaf	lack of appetite, digestive problem, fever, cough, difficult breathing	lack of appetite, digestive problem, reducing fever, cough, difficult breathing	Alkaloid, volatile oil, quercetine, saponin, propofenol, flavonid, alkaloid (Untung, Trubus, n.d: 216) ^[28]
18.	Garden shrub, Temen	<i>Graptophllum Pictum L</i>	Leave	Cough, flu	Cough, flu	-
19.	Sugar apples	<i>Annona suquamosa L</i>	Fruit, leave	Abses, dog worms	Abses, dog worms	Borneal, comphor, terpene alkaloed anonam im roost and bark. The seeds contain fat, resin. The fruit contains amino acid and tanin

						(Hariana,2013; 358-359)
20.	Cenfella, <i>Peduh</i>	<i>Cenfella asitica (L)</i>	Leave	Reducing fever	Reducing fever	Asiaticoside, Thnkunside medicassoside/bfah mocide madasiatic acie (Hariana, 2018:274)

3.1.2 Research on *Loloh* as Balinese Traditional Drink

The ingredients for this Balinese traditional herbal drink are found in *lontar usadha* that describes the medical plants [29], [30], [31]. Traditional food is consumed by certain ethnic communities [32]. Traditional food has the competitive advantage that is natural, rich in taste and available all year long [33]. The weakness is the unattractive presentation, local taste, nonstandard mixture [34]. Apart from this, industry drink products monopolize local, national and international markets [35]. We are very aware that the drinks

by alcohol. The ex-President of France said that our greatest enemy is alcoholic drink. It will cause us a greater problem than the battle against German [36]. In the light of these problems, it is time for moving from alcohol consumers to traditional drinks, except *tuak* and *arak*, as traditional drink can increase the community economy [36], [37], [38]. If the traditional drink is presented in a modern presentation, laboratory testing, so that it meets health requirements, it will bring benefit for holding capacity of tourism development and creative economy through local culinary since tourism sector needs support from natural food and drink providers [39].

Medical plants can function as medicine and herbal beverages, for example *kencur* to cure cough, rheumatism, itchy skin, disease suffered by babies. In addition, it can also be used as herbal treatments such as *jamu beras kencur*. Similarly, wild ginger, *temutis* as to cure swelling, mix with red ginger to serve as herbal drink. Cheese fruit can cure fever, lack of appetite. In addition, it can be used as a herbal drink. This happens because the plants serve as medicine [16]. The use of natural substances as traditional medicine in Indonesia has been done by our ancestors [40]. The use is related to the historical background of Bali community life [41]. The background is that Balinese were farmers, the people were close to agricultural crops like ginger, turmeric, rice and galingale, wild ginger *temu lawak*, which are traditional drink ingredients. The use of herbal drink is part of the nation's culture [42], both as a drink and a medicine. The basic ingredients of *jamu* (traditional herbal drink) are ginger, turmeric, wild ginger *temulawak* and galingale which are usually used as traditional medicines, since the effectiveness of the spices that is related to antioxidant in ginger [43], turmeric as anti-rheumatic [44], *temulawak* as anti-hepatitis [45], [46], [47]. Out of all kinds of *loloh* (herbal drink), not all have commercial potential because of their tastes. Those that have the commercial potential are galingale, *temutis (Curcuma Purpurascens)*, *cemcem (Spondias Pinata Kurz)*, *mengkudu (Morindi*

sold in the market contain much alcohol which is consumed not only by young people, but also by below young children, old people, celebrities, political elite [36].

In U.K. scholars stated that 95% of mental cases were caused by alcoholic drinks. French Health Minister said that the mortality rate caused by alcohol is 20.000 people each year. Secretary General of the Committee for Alcohol Eradication stated that 25% of the industrial accidents and 57% of highway accidents were caused

Cirifolia), brown rice (*Oriza sativa linn.F*), *beluntas Pluechea Indica (L) Lees*) and turmeric.

3.1.3 Medical Plants in Educational Perspective

The use of medical plants to be *loloh* are not only about the advantage of herbal medicine but also about the health education. In this case, the educational perspective has its role. *Loloh* is useful as herbal treatments which usages, ingredients and dosages have to be learned. Meanwhile the plants have to be available during the necessary time. It means that the plants have to be cultivated. It should be learned how to seed, to plant, to look after, and to harvest the plants especially how to choose the best harvesting time that is related to the quality of the crops.

People also would like to know the names of those medicine plants. The names and the description are studied by using Ecolinguistics approach.

The customs of consuming *loloh* is one of some efforts to grow the caring of local culture and natural products. The next educational perspective is that by maintaining the customs of consuming *loloh*, people tend to be economists, especially in saving expenses for buying any other supplements or chemical medicine.

The customs of consuming *loloh* can emerge the curiosity of maintaining, and preserving both the medical plants and the planting areas. The younger generations by the help from their seniors would learn more about *loloh*. Especially, children would learn about the kinds of medical plant and the plants' characteristics. This learning is related to ecolinguistics.

The knowledge of medical plants cultivation has eco-pedagogical, ecological, and ecolinguistical practices. Moreover, the cultivation of medical plants can coincidentally grow the eco-tourism since there should be a parallel process of cultivating and producing the herbals, which are actually kinds of attraction.

The next educational aspect is the area of medical plants cultivation can be a natural laboratory for students to learn many disciplines, among them, the etnofarmacology, ecolinguistics, and etnobotany.

IV. CONCLUSION AND SUGGESTION

1. The research about the ingredients of *loloh* as medicine comes from *usadha balian* and the contents of its main ingredients scientifically has a logical relation. The main ingredients of the medicine are Greater galangale (*Kaempferia galanga L.*) Wild ginger, *temutis* (*Curcuma purpurascens Bl.*), Wild ginger, *lempuyang* (*Zingiber zerumbet (L)*), Fruit bearing (*Averrhoa bilimbi*), Sambong (*Blumea balsamifera D.C*), Ripening fruit, *kacemcem* (*Spondias pinata kurz*), Turmeric (*Curcuma domestica*), Cheese fruit (*Monrondi citrifolia*), Betle leave (*Piper betel*), Starfruit (*Averrhoa carambola*), Brown rice (*Oriza sativa*), Cinnamon (*Cinnamomum zeylanicum*), Weedy rice (*Oriza sativa F. gultinosa al auct*), Pennywort (*Hydrocotyle sibthorpidides lam*), *Blumea* (*Blumea balsamifera DCF*), Chinese keys (*Gasatrochilus panduratum ridl*), Indian fleabane (*Pluchea Indica (L) Lees*), Sugar apples (*Annona suquamosa L*), *Garden shrub* (*Graptophyllum pictum L.*, and *Cenfella* (*Cenfella asiatica (L)*).
2. The research of *loloh* as Balinese traditional herbal drink shows that it has the strength because it is natural, useful as medicine and has the economic potential. The herbal plants in this category are galangal, wild ginger, *temutis*, ripening fruit, *turmeric*, cheese fruit, brown rice, chinese keys, and *blumea*.
3. Medical plants have the educational perspectives specifically it encourages an interdisciplinary studies, namely, ecology, eco-pedagogy, ethno-pedagogy, ethno-botany, eco linguistics, and ethno-pharmacology. Besides the cultivation of medical plants emerges the development of ecotourism.

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