

# Ecolexicon of Balinese Medical Plants in *Lontar Usada Putih*: An Ecolinguistics Study

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**Abstract**—*Lontar usada* is a text that contains traditional medicine that the Balinese have trusted for a long time. This knowledge originated in India and then spread to Bali along with the development of Hinduism in the 5th century AD. *Lontar usada* is written on palm leaves in a long rectangular shape with a size of 3.5 cm x 35 cm. *Lontar usada* has several types, including *lontar usada putih*. This study was intended to analyze *lontar usada putih* as a guideline for traditional medicine using an Ecolinguistic perspective. Qualitative methods were applied in this study. The data source was a document (Translated text of *lontar usada putih*) with No. 111d 158/2. A number of attachments 38 copied from the *lontar* belongs to Cokorda Putra from Petak Village, Abianbase District, Gianyar. The researchers also collected data through interviews obtaining data from Kawi (ancient Javanese) particularly. In this case, interviews were conducted to obtain data, especially language rituals or treatment in prayer form, especially Sanskrit. Several informants were interviewed: Pandita (priest) and Balian, a Balinese healer. Based on the results of the analysis, it was found that each treatment in the *lontar usada putih* not only uses medicinal media in the form of plants but also contains mantras, ceremonies, and special offerings.

**Index Terms**—Balinese, ecolexicon, *lontar*, traditional medicine, *usada*

## I. INTRODUCTION

Bali, known as the Island of the Gods, is located between Java Island and Lombok island (Parker, 2004, p. 229; Samadhi, 2004). Bali is formerly part of the Lesser Sunda Province along with Lombok, Sumbawa, Sumba, Flores and Timor. Then, in 1958, Bali officially became an independent province with Singaraja as the capital (BPS Provinsi Bali, 2010).

The majority of Balinese people adhere to Hinduism and are familiar with the concept of *Tri Hita Karana*. *Tri Hita Karana* means three harmonious relationships between humans, environment and God (Ackerley, 2019). Briefly, it formulates as three things that can cause humans to achieve prosperity, happiness, and peace. The philosophy of *Tri Hita Karana* is a concept that expects humans to maintain relationships among the three elements so that they can gain the happiness. The three elements are 1) The harmonious relationship between humans and Ida Sang Hyang Widhi Wasa (Parhyangan). 2) The harmonious relationship between humans and each other (Pawongan). 3) Harmonious relationship between humans and their environment (Palemahan) (Wardana & Sudira, 1999).

The concept of a harmonious relationship between humans and the environment (Palemahan) above, in particular, is interesting to study with an ecolinguistics approach. In fact, the application of Palemahan in *Tri Hita Karana* can manifest in environmental cleanliness through disinfecting and cleaning the environment, as well as the use of traditional medicines (Arini, 2020). Moreover, the use of these traditional medicines has long been applied by the ancestors until now; they are still the main choice of the Balinese people (Shan et al., 2023; Hasheminasab & Fakhari, 2013). In this case, traditional Balinese medicine refers to the traditions, experiences, and skills passed down from generation to generation by the Balinese people, both those that have not been recorded and those that have been literate in *lontar usada* or education or training and are applied in accordance with the norms prevailing in Balinese society (see Governor of Bali Regulation No. 55 of 2019).

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Balinese people are familiar with the medicinal properties of plants (Hanum, 2011). In this sense, traditional medicines are completely natural compounds that can be prepared in various ways based on the healing properties of medicinal plants (Li et al., 2023). Hereby, traditional medicine of Balinese is recorded in the *lontar usada*. The word “usada” comes from the Sanskrit word “ausadhi”, which means plants that contain medicinal properties (Nala, 1992). Meanwhile, the Balinese *lontar usada* is a manuscript that contains a system of medicine, prescriptions or medicine ingredients and traditional healing methods in Bali. Traditionally, *lontar usada* is a reflection of Hindus, especially in Bali, who believe that getting sickness is the will of Shang Hyang Widhi (Almighty God). So, the *usada* method of treatment is a form of the greatness of Shang Hyang Widhi, who can cure various types of diseases (Sutomo & Iryadi, 2019). According to Sukantra (1992), *usada* is the science of traditional Balinese medicine, whose source of teachings is in *lontar*. Even though many community health centres, such as public health centres, clinics, and hospitals scattered, the community still relies on *Battra* or *Balian* (traditional healers) (see Sa’roni, 2012). Nevertheless, people’s interest in traditional medicine is increasing nowadays because conventional medicine and common healthcare would eventually dwindle or perish would be naive (Kalangie, 1994).

In this sense, Balinese people believe in traditional healing system; even the Balinese government has regulated traditional medicinal health services (see Governor of Bali Regulation No. 55 of 2019). In this sense, Balinese believe that health and illness occur due to a combination of *shtula sarira-suksma* and *sarira-antahkarana sarira* (the balance between body, mind and spirit) (see Arsana et al., 2020). Balinese people assume that disease is not only a physical symptom but also has other dimensions, namely social and cultural. That is why to cure a disease, it is not enough to diagnose the biological and socio-cultural problems.

The disease is a certain abnormal condition that negatively affects the structure or function of a part or all of a living thing’s body and is not the direct result of external injury. A disease is a medical condition associated with certain clinical signs and symptoms (Arias, 2015). Meanwhile, Timmreck (2005) says that the disease is a condition where there is a disturbance in the form and function of the body so that it is in an abnormal state. In this case, based on the beliefs of the Balinese people, diseases are classified into two groups: personalistic diseases (*niskala*) and naturalistic diseases (*sekala*) (Eiseman, 1990; Kumbara, 2010). Personalistic disease (*niskala*) is a disease caused by the interference of non-human evil agents, namely in the form of interference by spirits, jinns, demons, ghosts, or other spirits, even by supernatural powers, such as gods that possess a person’s body and soul so that become ill (Nala, 1992). Meanwhile, naturalistic diseases (*sekala*) are illnesses or health problems caused by natural conditions (not from evil spirits) but occur, such as wind, rain, hot, cold, and humid weather which are explained impersonally and systemically (Jirnaya, 2017; Kumbara, 2010; Nala, 1992; Pool & Geissler, 2005).

In light of the above, it can be concluded that Balinese *lontar usada* manifests the relationship between speakers of society towards the environment (language and ecology). Mbete (2013) emphasizes that language and the environment is connected each other, in which environment influence the speech community and language used mostly come from the environment (see Stibbe, 2015; Umiyati, 2023; Fill & Steffensen, 2014). Thus, it is not surprising anymore every society that lives side by side in a community will form a language culture such as a culture of figurative language (metaphor), poetry, and even rules based on the environment in which they live (Gaho, 2022; Utami, 2017). Therefore, this study is focused on analyzing ecolexicon of medical plants of Balinese community, examining language rituals as a treatment and analyzing ecosophy of *Lontar Usada Putih* of Balinese community.

## II. LITERATURE REVIEW

Many studies with an Ecolinguistic approach have been carried out (see Stibbe, 2014; Steffensen & Fill, 2014; Li et al., 2020; Cowley, 2021; Penz & Fill, 2022). Khotimah et al. (2021) described that eco-lexicon lingual expressions related to COVID-19 in various Indonesian online media. This research shows that the identified eco-lexicon can be grouped into physical/biological reality, social reality, and symbolic/ideological reality. Then, Luardini et al. (2019) explain that there are essential elements of the relationship between ethnic culture and ethnobotanical language in the Dayak Ngaju that have been identified, namely the social and cultural values expressed in local wisdom and their implications for the utilization and preservation of living plants in the locality. In addition, some research has been done on *Usada* Bali in the health (see Sujarwo et al., 2015; Mu’jizah, 2016), theology (see Bhandesa et al., 2021). However, none of the studies above has combined *usada* Bali analysis in an ecolinguistic perspective as formulated in this study.

### Concept and Theory

#### A. Ecolinguistics

Ecolinguistics is a scientific discipline that examines the relationship between language and ecology. Haugen (1972) stated that language with ecology can be defined as a study of the interaction between languages and their environment or the environment in which the language is used. Then, Fill and Penz (2018) defines ecolinguistics as one of the studies in linguistics that look for connectivity between ecosystems that are part of the human life system (ecology) and the language used by humans to communicate in their environment (linguistics). In other words, the relationship between language and the environment describes changes in the environment that can cause changes in language (Eliasson, 2015). Broadly, people’s behaviour towards their environment is also influenced by the language they use (see Sapir, 1912).

#### B. Language Ecology

In general, language is a method or tool for conveying ideas, feelings and desires that are genuinely human and non-instinctive by using a system of symbols that are produced intentionally and voluntarily (Sapir, 1924). Meanwhile, ecology is the study of plants and animals as individuals and simultaneously in biological populations and communities concerning their environment-physical, chemical, and biological characteristics of the environment (Chen, 2016). Ecology can be interpreted as a branch of science that studies the interactions of living things or groups of living things with their environment. Ecology is a comprehensive science about the structure and function of nature that determine the distribution and abundance of organisms (Krebs, 1999; Odum, 1971). Meanwhile, Stibbe (2012) states that ecology is a science that studies natural life scientifically or scientific natural history.

In essence, the relationship between language and ecology has a reciprocal relationship in linguistic studies, especially ecolinguistics. The first part is the psychological environment, namely the influence of the environment on the languages in the minds or cognition of speakers of these languages, and the second part is sociological, namely the relationship between the environment and the people who use these languages as their medium of communication (Haugen, 1966). Chomsky (2006) says that language is a product of human interaction with the world around them, the natural world and the social world. In contrast, Goatly (1996) argues that language and the environment are two things that influence each other.

### C. *Usada*

*Usada* is Balinese traditional medicine. *Usada* comes from the Sanskrit language “ausadhi” which means plants that contain medicinal properties. This knowledge originated in India and then spread to Bali along with the development of Hinduism in the 5th century AD. *Lontar Usada* is written on palm leaves (*Borassus flabellifer* L.) in a long rectangular shape with a size of 3.5 cm x 35 cm (Nala, 1992). *Usada* is a traditional Balinese medical science written in kawi (ancient Javanese) which has many teachings and teachings related to various methods of treatment and various ceremonies for self-purification (Mu’jizah, 2016). As a writing pad with Balinese script as a writing tool, *Lontar* is also considered sacred. *Usada* is divided into several types whose treatment depends on the type of disease (see McCauley, 1988). In each ejection, *usada* has a method of weighting and the types of diseases that are treated. The existence of *usada* as a medicinal manuscript which is a richness of the Nusantara’s written tradition, has attracted the attention of researchers.

## III. METHODS

This research uses a descriptive qualitative approach. The data source for this study was a document (translated text of *lontar usada putih*) with *lontar* number: (No. 111d 158/2) number of attachments 38 copied from the *Lontar* belonging to Cokorda Putra from Petak Village, Abianbase District, Gianyar. Then, it was copied and translated by I Dewa Putu Arka on Friday, 2 March 1851 (the original text of the *lontar* is now in Gedong Kirtya Singaraja). In addition to the data obtained from *lontar*, researchers also collected data through interviews. In this case, interviews were conducted to obtain data, especially language rituals or treatment in prayer form, especially Sanskrit. Several informants were interviewed, namely *pandita* (priest) and *Balian*, Balinese healer. After collecting data, it is then analyzed using an ecolinguistic approach (Haugen, 1972). Furthermore, the data are classified in tables and interpreted according to the disease category and the treatment technique.

## IV. RESULTS

### A. *Ecolexicon of Medical Plants of Balinese Community Found in Lontar Usada Putih*

In this section, the *ecolexicon* of Balinese medicinal plants is classified based on the type of disease found. Then, how to use the *ecolexicon* is explained based on its function. In this study, there are 7 categories of diseases that use medicinal plant ingredients of the Balinese people. The seven disease categories are the mild disease category, the category of diseases in the eye area, the stomach and digestive diseases category, the category of diseases contained mantra in the treatment, the category of diseases caused by spirits, the category of skin and venereal diseases, and the feet disease category, as described below.

TABLE 1  
AILMENT CATEGORY (MINOR ILLNESS)

No	Ecolexicon of Medical plants in Balinese	Scientific name	Functions	Symptoms/local disease	How to use
1	<i>Gelagah</i>	Saccharum spontaneum	Cough and phlegm medicine	-	<i>Kesuna</i> is burned, then chew all the ingredients. Then sprayed on the chest
2	<i>Akar alang-alang</i>	Imperata cylindrica			
3	<i>Kesuna</i>	Allium sativum			
4	<i>Sari kuning (kuning telor)</i>				
5	<i>Daun Suren</i>	-	Cough medicine with phlegm mixed with pus and wheezing	-	Mix all the ingredients, then boil it in a pan, then eat it all
6	<i>Buu</i>	-			
7	<i>Sembung kacemcem</i>	Blumea balsamifera			
8	<i>Buah blimbing buluh</i>	Averrhoa Bilimbi Linn			
9	<i>Pule</i>	Alstonia scholaris			
10	<i>Kesimbukan</i>	Paederia foetida L			
11	<i>Pancar sona</i>	Lawsonia inermis			
12	<i>Kangkang yuyu (cangkak kepiting)</i>				
13	<i>Dingin-dingin</i>	-			
14	<i>Kemiri</i>	Aleurites moluccana			
15	<i>Dadap</i>	Erythrina subumbrans			
16	<i>Miana cemeng</i>	Coleus benth			
17	<i>Selasih harum</i>	Ocimum			
18	<i>Sumanggi gunung</i>	Hydrocotyle sibthorpioides			
19	<i>Montong isen (ujung lengkuas)</i>	Alpinia galanga			
20	<i>Lunak tanek</i>	Tamarindus indica			
21	<i>Kunyit warangan</i>	Curcuma demostica			
22	<i>Bulung daya (rumpun laut)</i>	-			
23	<i>Isindrong wayah (campuran rempah-rempah bali)</i>				
24	<i>Air jeruk</i>	Citrus			
25	<i>Don dardap wong</i>	Erytherina variegata	<i>Tiwang jeret</i>	Medication if the teeth grind (chills)	Chew all the ingredients then spit out in his stomach
26	<i>Kunyit warangan</i>	Curcuma demostica			
27	<i>Tri ketuka</i>				
28	<i>Rerambutan pule</i>	Alstonia scholaris	Flatulence medicine	Catch a cold	Steam all the ingredients and then mix and eat every day
29	<i>Akar arjuna</i>	Terminalia arjuna			
30	<i>Akar belimbing besi putih</i>	Averrhoa bilimbi			
31	<i>Cuka tahun</i>	Vinegar	<i>Sebaha</i> medicine	-	Mix all the ingredients with vinegar, then drink while face down
32	<i>Mica 5 biji</i>	Piper nigrum			
33	<i>Lunak tanek</i>				
34	<i>Sumanggi gunung</i>	Hydrocotyle sibthorpioides			
35	<i>Uyah menyahnyah (garam)</i>	-			
36	<i>Akar alang-alang</i>	Imperata cylindrica	Medicine for headache	Headache throbbing and stabbing	Chew all the ingredients then spout on the head
37	<i>Lengkuas</i>	Alpinia galanga			
38	<i>Kunyit</i>	Curcuma demosti			
39	<i>Kepasilan</i>	Loranthus			
40	<i>Delima</i>	Punica granatum			

Table 1 above shows 40 ecolexicon of medicinal plants used by Balinese people to treat minor ailments such as

coughing up phlegm, flatulence (colds), and headaches. Some of the ecolexicon names of these medicinal plants are in Indonesian, for example *delima* 'pomegranate,' *lengkuas* 'galangal,' *kemiri* 'candlenut,' *akar alang-alang* 'reed root,' and *kunyit* 'turmeric'.

TABLE 2  
CATEGORY OF DISEASES IN THE EYE AREA

No	Ecolexicon of Medical plants in Balinese	Scientific name	Functions	How to use
1	<i>Akar karuk</i>	<i>Piper sarmentosum</i>	Itchy eye drops	Mix all the ingredients with water then put in the eye
2	<i>Uyah lanang (garam)</i>	salt		
3	<i>Kunyit</i>	<i>Curcuma demosti</i>	Swollen and blurry eye drops	Mix all the ingredients with water then put in the eye
4	<i>Kemiri lanang</i>	<i>Aleurites moluccanus</i>		
5	<i>Uyah lanang</i>	Salt		
6	<i>Sulasih</i>	<i>Ocimum basilicum</i>		

Table 2 above shows ecolexicon of medicinal plants used by the Balinese, especially to treat diseases in the eye area. The application of the medicine is that all the composition is mixed and then applied to the sore eye area.

TABLE 3  
STOMACH AND DIGESTIVE DISEASES CATEGORY

No	Ecolexicon of Medical plants in Balinese	Scientific name	Functions	Symptoms/local disease	How to use
1	<i>Pucuk pohon sembung</i>	<i>Blumea balsamifera</i>	Diarrhea medicine	Dirt seeps	Grind brown rice, then mix the shoots of the <i>sembung</i> tree and the core of the onion and then eat it.
2	<i>Inti bawang merah</i>	<i>Allium cepa</i> L. var. <i>aggregatum</i>			
3	<i>Beras merah</i>	<i>Oryza rufipogon</i>			
4	<i>Sari kesumbasam (daun kentut)</i>	<i>Paederia foetida</i>	<i>Mokan tua</i>	Unable to defecate every day	Mix all the ingredients together, then rub it under the navel
5	<i>Bawang</i>	<i>Allium cepa</i> L. var. <i>aggregatum</i>			
6	<i>Jeruk</i>	Citrus			
7	<i>Air gosokan tembaga</i>	-			
8	<i>Daun liligundi</i>	<i>Vitex trifolia</i>	<i>Sakit puruh usus</i>	Stomach ache	Chew all the ingredients, then sprayed on his stomach.
9	<i>Mesui</i>	<i>Cryptocarya massoia</i>			
10	<i>Triketuka</i>	Triketuka { <i>Kesuna</i> ( <i>Allium sativum</i> L), <i>Jangu</i> ( <i>Acorus calamus</i> ), <i>Mesui</i> ( <i>Cryptocarya massoy</i> (Oken) <i>Kosterm.</i> )},	<i>Sakit gula segara</i>	Stomach rumbling continuously	Pound the sea shell charcoal and <i>tri ketuka</i> then add <i>ludah merah</i> and stick it in the stomach
11	<i>Arang kerang laut</i>	Charcoal			
12	<i>Tri ketuka</i>	Triketuka { <i>Kesuna</i> ( <i>Allium sativum</i> L), <i>Jangu</i> ( <i>Acorus calamus</i> ), <i>Mesui</i> ( <i>Cryptocarya massoy</i> (Oken) <i>Kosterm.</i> )},			
13	<i>Air ludah merah (spit when eating betel)</i>		<i>Sakit sula penyu</i>	If the stomach hurts right in the navel, the body is shocked	Mash all the ingredients then rub in his stomach
14	<i>Daun sirih</i>	<i>Piper betle</i>			
15	<i>Tri ketuka</i>	Triketuka { <i>Kesuna</i> ( <i>Allium sativum</i> L), <i>Jangu</i> ( <i>Acorus calamus</i> ), <i>Mesui</i> ( <i>Cryptocarya massoy</i> (Oken) <i>Kosterm.</i> )},	Medication for stomach tightness and nausea	-	Chew all the ingredients until smooth, then spray in the solar plexus
16	<i>Kulit kepah</i>	<i>Sterculia foetida</i>			
17	<i>Kapur serbuk</i>	Powdered chalk			
18	<i>Akar jeruk putih (jeruk bali berwarna putih)</i>	<i>Citrus grandis</i>			
19	<i>Lengkuas</i>	<i>Alpinia galanga</i>			
20	<i>Gamongan</i>	<i>Zingiber zerumbet</i>			
21	<i>Ketumbar</i>	<i>Coriandrum sativum</i>			

Table 3 above shows 21 ecolexicons of medicinal plants used to treat diseases in the stomach and digestive areas in humans. Each of the ecolexicon lists of medicinal plants has a different way of application, for example the ecolexicon in no. 1-3 is used for the treatment of diarrhea, in which grind brown rice, then mix the shoots of the *sembung* tree and the core of the onion and then eat it. Likewise, other types of medicinal plants are applied in different ways.

TABLE 4  
CATEGORY OF DISEASES CONTAINED MANTRA IN THE TREATMENT

No	Ecolexicon of Medical plants in Balinese	Scientific name	Functions/usability specifications	Symptoms/local disease	How to use
1	<i>Akar baliga harum</i>	-	Hot and restless medicine, like unconsciousness, hot spine, and stomach.	-	First, steam the fragrant <i>akar bali aga</i> , <i>tombong</i> and <i>sari kuning</i> (egg yolk) then drip it. The skins of the two candlenuts and tingulun are taken, then the coriander <i>bebolong</i> is chewed and then sprayed on the body. The three base worms, tamarind roasted coconut are cooked then sprayed all over the body. Fourth, mix <i>gamongan</i> and rice water and then apply it to the body. The incantation " <i>Ong Sang Hyang Siwa Raditya, sire uriping sarira uriping bayu sabda idep mreta sanjiwani ne namah</i> ".
2	<i>Tombong</i>	-			
3	<i>Sari kuning (egg yolk)</i>	-			
4	<i>Kemiri</i>	<i>Aleurites moluccana</i>			
5	<i>Tingulun</i>	<i>Protium javanicum</i>			
6	<i>Ketumbar bebolong</i>	<i>Coriandrum sativum</i>			
7	<i>Cacing base</i>	-			
8	<i>Kelapa bakar asam</i>	-			
9	<i>Gamongan</i>	<i>Zingiber zerumbet</i>			
10	<i>Air beras</i>	-			
11	<i>Damuh-damuh</i>	<i>Oxalis corniculata</i>	<i>Tikna kuta merana.</i>	High fever, and sleeps well, hard to wake up and headaches.	First, mix the <i>damuh-damuh</i> , sugarcane leaves, <i>damuh telengisan</i> and <i>sari kuning</i> (egg yolk), then put drops on the nose. Second, mix the <i>selegui</i> root, <i>dapdap wong</i> root, <i>delungdung</i> root, <i>banyan</i> root, <i>hawa cacing</i> root and grilled onion, then boil and drink the boiled water. The incantation " <i>Ong Sah Lara, Sah Roga Sah Saluiring Wisya Ngawa, Wisyan Manusa, Teke Purna Waras</i> ".
12	<i>Daun tebu</i>	<i>Saccharum officinarum</i> Linn			
13	<i>Damuh telengisan</i>	-			
14	<i>Sari kuning (egg yolk)</i>	-			
15	<i>Akar selegui</i>	<i>Sida rhombifolia</i>			
16	<i>Akar dadap wong</i>	<i>Erytherina variegata</i>			
17	<i>Akar delungdung</i>	<i>Erythrina euodiphylla</i>			
18	<i>Akar hawa beringin</i>	<i>Ficus benjamina</i>			
19	<i>Akar hawa cacing</i>	<i>Erythrina ovalifolia</i> Roxb.			
20	<i>Bawang bakar</i>	<i>Allium cepa</i> var. <i>aggregatum</i>			
21	<i>Duri pohon bila</i>	<i>Aegle marmelos</i> (L.)	<i>Sangar tulang tiwang</i>	Throbbing leg pain, trembling and restlessness	Mash all the ingredients then spread evenly throughout the legs. Mantranya " <i>Ih nini batara durga, ingsun aminta tambakena tuju, tuju nyanyati, tuju pamali, pulung roja pulung kapanda, sira andadening manusa, anguripaken jatma manusane sianu, ana panambana batari, saji sega sanga iwaknya buktine den atrepi</i> ". Offerings "Rice 1 plate of processed pork, cooked and raw, offered at the cremation site, at night ask Sang Hyang Durga for life"
22	<i>Duri kaliaga</i>	<i>Maclura cochinchinensis</i>			
23	<i>Duri jeruk</i>	<i>Citrus maxima</i>			
24	<i>Sampah dikuburan</i>	-			
25	<i>Air cuka tahun</i>	-			
26	<i>Akar gelagah</i>	<i>Saccharum spontaneum</i>	<i>Sakit pemali</i>	The pain stabbed all over his body before the day of <i>kajeng kliwon</i> (disturbance of evil spirits)	Mix all the ingredients then puree and then eat. The incantation " <i>Ong Ratu Manca ya ngawe pamali, aku manggawe ratu manca ya, aku I dukuh putih, guruning sarwa jagat muksah kita pamali sasab mulih alih memen ibe sesep ati jejeron babunta poma, 3</i> "
27	<i>Alang-alang yang baru tumbuh</i>	<i>Imperata cylindrica</i>			
28	<i>Beras merah</i>	<i>Oryza rufipogon</i>			
29	<i>Kelapa bakar</i>	-			
30	<i>Sari Lungid</i>	-			
31	<i>Daun ara (loa)</i>	<i>Ficus racemosa</i>	<i>Kaki lupa</i>	Legs feel numb	Grind the <i>aba</i> leaves, red sticky rice, 3 slices of galangal and <i>tri ketuka</i> then mix it with the sliced oranges then stick it on the leg. The incantation " <i>Ong lara teka saking tan hana, Ong lara teka saking sunya, muksah saking sunya, Ong lara teka saking namu-namu muksah saking namu-namu, Ong lara teka saking pertiwi, muksah ilang rep sirep waras si anu, sidimantranku</i> "
32	<i>Ketan merah</i>	<i>Oryza sativa</i> L. Var. <i>Glutinosa</i>			
33	<i>Lengkuas 3 iris</i>	<i>Alpinia galanga</i>			
34	<i>Tri ketuka</i>	<i>Triketuka</i> { <i>Kesuna</i> ( <i>Allium sativum</i> L), <i>Jangu</i> ( <i>Acorus calamus</i> ), <i>Mesui</i> ( <i>Cryptocarya massoy</i> (Oken) <i>Kosterm.</i> )},			
35	<i>Jeruk diiris-iris</i>	<i>Citrus</i>			
36	<i>Kulit pohon angsoka</i>	<i>Pterocarpus indicus</i>	<i>Mising</i>	Bloody stools	Mix all the ingredients with hot water then eat. The incantation " <i>Rasa enreta kang sarira wisya emreta kang sarira, sinamah swaha</i> ".
37	<i>Akar pohon kasine</i>	-			
38	<i>Asam limo</i>	<i>Citrus xamblycarpa</i>			
39	<i>Akar pohon kembang sepatu</i>	<i>Hibiscus rosa-sinensis</i>			

40	<i>Majagau</i>	Dysoxylum densiflorum			
41	<i>Uyah uku (Salt)</i>	-			
42	<i>Temu</i>	curcuma purpurascens blumen	Myopic eyes	-	Blend all the ingredients then rub in the eyes. The incantation " <i>Ong syah mega, syah mendung, ilang kelilipan lara ne tra kiwa tengen, ah 3, sidi mantraku</i> "
43	<i>Kunyit</i>	Curcuma demostica			
44	<i>Lapisan bawang putih</i>	Allium sativum			
45	<i>Garam</i>	Salt			
46	<i>Sasirih paporos (daun sirih digulung dengan isinya)</i>	Piper betle	Medicine to be strong with women who want to have children	-	When you have sex with your wife, then eat half of each betel nut and then recite the incantation " <i>ong kaki manik, kinon sang roja wisesa, anurunana rare, den sidi, den enggal telas</i> ".
47	<i>Buah pinang muda</i>	Areca catechu			
48	<i>Daun Lontar</i>	Borassus flabellifer L	Medication baby cries every night	-	Palm leaves are written with incantation " <i>ong si biang babi ah, ayah ah telas</i> "
49	<i>Kesuna tunggal</i>	Allium sativum	Leprosy Medicine	-	The way of treatment is chewing all the ingredients and then sprinkling it on the area where there is leprosy. For the incantation " <i>indah ta kita sang hyang kusta, sakwehing kusta, kusta penyuu, kusta empas, kusta lawu, kusta yuyu sakwehing kusta waras dening idu bang waras 3, sidi mantraku</i> "
50	<i>Buah pinang yang tua</i>	Areca catechu			
51	<i>Tri ketuka</i>	Triketuka (Kesuna (Allium sativum L), Jangu (Acorus calamus), Mesui (Cryptocarya massoy (Oken) Kosterm.)			

Table 4 above shows 51 eclexicons of medicinal plants used to treat certain diseases such as myopic eyes, fainting (unconsciousness), fever and restlessness, hot spine, and stomach. Uniquely, application of this medicine must be accompanied by a spell, for example the medicinal plants at no. 1-10 applied to the diseased area while chanting the mantra.

TABLE 5  
CATEGORY OF DISEASES CAUSED BY SPIRITS

No	Ecolexicon of Medical plants in Balinese	Functions/usability specifications	Symptoms/local disease	How to use
1	<i>Kulit pohon kalumdahan</i>	<i>Kena desti</i> (Spirit disorder medicine)	The pain stabs all around the body	Mash all the ingredients, then apply all over the body
2	<i>Kulit pojon satumpur</i>			
3	<i>Akar waduri pinge (pohon bunga)</i>			
4	<i>Akar kamarunggi</i>			
5	<i>Cangkem butuh</i>			
6	<i>Derekan temukus</i>			
7	<i>Sida wayah</i>			
8	<i>Tanduk kambing</i>	Medicine keeps the souls of babies who are stricken with disease	-	image of goat horns. Then, put on a sick baby. As a result, all the creatures and all the demons and black magic disappeared. For offering: <i>canang 1, daksina 1, uang 777</i> .

As explained in the previous section, the Balinese believe that disease can also be caused by spirits. Therefore, the Balinese people have medicinal plants that are used to treat these diseases as contained in Table 5 above.

TABLE 6  
CATEGORY OF SKIN AND VENEREAL DISEASES

No	Ecolexicon of Medical plants in Balinese	Scientific name	Functions/usability specifications	Symptoms/local disease	How to use
1	<i>Akar pohon tembakau</i>	Nicotiana tabacum	<i>Seksekan</i>	Pee constantly	Peel all the ingredients, then dry it in the sun until it's dry and then boil it and add lump sugar and drink it while it's warm
2	<i>Akar pohon tuung kanji</i>	Solanum melongena			
3	<i>Gula batu</i>	lump sugar			
4	<i>Kelopak bunga kapas tahun</i>	Gossypium herbaceum linn	<i>Rasa talu</i>	If the lower abdomen hurts and is accompanied by gonorrhea, it is rather sticky	Squeeze all the ingredients, add water, then the dregs from the squeezed ingredients are placed on the waist.
5	<i>Daun kuang</i>	Pandanus amaryllifolius			
6	<i>Bawang merah dan adas</i>	Allium cepa L. var. aggregatum, Foeniculum vulgare			
7	<i>Kerokan batok kelapa</i>	-	<i>Berung (Scabies)</i>	-	Chew all the ingredients, then spray on the scabies area
8	<i>Buah pinang yg tua</i>	Areca catechu			
9	<i>Ketumbar</i>	Coriandrum sativum			
10	<i>Lengkuas</i>	Alpinia galanga			
11	<i>Buah sirih</i>	Piper betle	<i>Sakit parang</i>	The genitals hurt, spots appear, pus oozes.	Mash all the ingredients then rub on the genitals
12	<i>Cekuh lanang</i>	Kaempferia galanga			
13	<i>Buah cangurip</i>	-			
14	<i>Isindrong</i>	-			
15	<i>Minyak kletik</i>	-			

Table 6 above shows 15 ecolexicons of medicinal plants used in the treatment of diseases in the category of skin and venereal diseases. Each of these drugs is applied in a different way, for example the ecolexicon of medicinal plants no. 1-3 is used to treat pee constantly. How to use it: peel all the ingredients, then dry it in the sun until it's dry and then boil it and add lump sugar and drink it while it's warm.

TABLE 7  
FEET DISEASE CATEGORY

No	Ecolexicon of Medical plants in Balinese	Scientific name	Functions/usability specifications	Symptoms/local disease	How to use
1	<i>Kulit pohon kacemcem</i>	Spondias dulcis L.	<i>Tuju sepang</i>	Legs feel stiff	First, grind the bark of the <i>kacemcem</i> tree, starch eggplant root, wrinkled eggplant root, <i>tri ketuka</i> , 2 flies that land on the pig's feeding place and <i>we werak</i> , then scrub the legs. Both fry 1 clove of garlic in keletik oil then 3 old betel leaves whose veins meet in the picture like in the following photo: Then rubbed 5 days once
2	<i>Akar terung kanji</i>	Solanum melongena			
3	<i>Akar terung keripit</i>	Solanum torvum Sw.			
4	<i>Tri ketuka</i>	Triketuka {Kesuna (Allium sativum L), Jangu (Acorus calamus), Mesui (Cryptocarya massoy (Oken) Kosterm.)},			
5	<i>2 ekor lalat yang hinggap di palungan (tempat makan babi)</i>	-			
6	<i>We werak (arak bali)</i>	-			
7	<i>Minyak keletik</i>	-			
8	<i>3 lembar daun sirih tua yang uratnya bertemu</i>	Piper betle			
9	<i>1 siung bawang putih tunggal</i>	Allium sativum			

In traditional Balinese medicine, *Balian* does not only use medicinal plants but also uses mantras, offerings, and *rerajahan*: pictures and writing in Balinese script as additional components for treatments (see Eiseman, 1990). In other

words, traditional Balinese medicine always involves other media, such as prayer. Therefore, *Balian* as a traditional healer must have sufficient knowledge, especially mastery of incantation and the ability to mix medicine for his patients.

#### B. Language Rituals (Mantras) as Treatment in the Form of Prayer

Apart from treatment through concoctions of herbal plants, the Balinese are also familiar with medicinal techniques through incantation or language rituals. Usually, this mantra is performed by *Balian* (Shaman) on people with a certain type of disease (see Atkinson, 1987). The language ritual or treatment in the form of prayer originates from the text "*lontar usada putih*," written in ancient Balinese. The following data have been interpreted directly by the *Balian*, as described below in several texts based on the type of disease being treated.

##### Mantra 1

*Ong si biang babiangan ah, ayah ah telas* [Hey mother, you are my mother and you are my father]

##### Mantra 2

*Indah ta kita sang hyang kusta, sakwehing kusta, kusta penyu, kusta empas, kusta lawu, kusta yuyu sakwehing kusta waras dening idu bang waras 3, sidi mantraku* [you are the god of leprosy, turtle leprosy, empas leprosy, lawu leprosy, yuyu leprosy, all types of leprosy can be cured with betel leaf water, my mantra works].

##### Mantra 3

*Ong Sang Hyang Siwa Raditya, sire uriping sarira uriping bayu sabda idep mreta sanjiwani ne namah* [God, who has the title Siwa Raditya, who gives life to humans in the form of energy, voice, thoughts and gives welfare to all living things].

##### Mantra 4

*Ong Sah Lara, Sah Roga Sah Saluiring Wisya Ngawa, Wisyan Manusa, Teke Purna Waras* [God removes the misery in man so that it becomes perfect].

##### Mantra 5

*Ih nini batara durga, ingsun aminta tambakena tuju, tuju nyanyati, tuju pamali, pulung roja pulung kapanda, sira andadening manusa, anguripaken jatma manusane sianu, ana panambana batari, saji sega sanga iwaknya buktine den atrepi* [Goddess Durga, I ask to be treated for bone disease, nyanyati bone pain, pemali bone pain, headaches, which are in the human body. I begged Goddess Durga to be healed. I offer offerings of 9 counters so that those who are sick can recover].

##### Mantra 6

*Ong Ratu Manca ya ngawe pamali, aku manggawe ratu manca ya, aku I dukuh putih, guruning sarwa jagat muksah kita pamali sasab mulih alih memen ibe sesep ati jejeron babunta poma* [There are five elements that make Pemali, I am the leader of all Pemali, I am Dukuh Putih, I am the ruler of the world of Pemali, all of you Pemali will be destroyed, return to your realm, eat your mother's liver and organs].

##### Mantra 7

*Ong lara teka saking tan hana, Ong lara teka saking sunya, muksah saking sunya, Ong lara teka saking namu-namu muksah saking namu-namu, Ong lara teka saking pertwi, muksah ilang rep sirep waras si anu, sidimantranku* [if there is a disease from nothing to exist, so does a disease from the unseen realm that returns to your nature, so does an unknown illness, it disappears. Give that person life and healing].

##### Mantra 8

*Rasa enreta kang sarira wisya emreta kang sarira, sinamah swaha* [All the pain that exists in the human body becomes life].

##### Mantra 9

*ong kaki manik, kinon sang roja wisesa, anurunana rare, den sidi, den enggal telas* [Science center, so that this knowledge can be passed on to their children so they can be caught quickly].

##### Mantra 10

*Ong syah mega, syah mendung, ilang kelilipan lara ne tra kiwa tengen, ah 3, sidi mantranku* [Dispel the darkness, disappear in the twinkling of an eye, my mantra works].

All mantras (1-10) are obtained from *Balian* (shaman) via interview on 13 December 2023.

## V. DISCUSSION

A. Classification of Ecolexicons of Medicinal Plants Found in Lontar Usada

The term ethnomedicinal plants in Balinese consists of two elements, similar to rules for naming plants. In this case, the first element is the generic/genus name, and the next modifies the name by describing its characteristics, functioning as the adjective of the adjective phrase. These characteristics are usually color, shape, location, smell and gender, as shown in Table 8 below.

TABLE 8  
CLASSIFICATION OF LEXICONS OF MEDICINAL PLANTS FOUND IN LONTAR USADA

No	Ecolexicon of Medical plants in Balinese	Latin/family name	Modifying element	Classification
1	Akar belimbing besi putih	Averrhoa bilimbi	Besi 'iron', putih 'white'	Color
2	Akar jerungga putih	Citrus grandis	Putih 'white'	
3	Ketan merah	Oryza sativa L. Var. Glutinosa	Merah 'red'	
4	Selasih harum	Ocimum	Harum 'fragrant'	Smell
5	Akar baliga harum	-	Harum 'fragrant'	
6	Sumanggi gunung	Hydrocotyle sibthorpioides	Gunung 'mountain'	Shape
7	Montong isen (ujung lengkuas)	Alpinia galanga	Montong 'muzzle'	
8	Jeruk Bali		Bali 'Bali island'	
9	Don dapdap wong	Erytherina variegata	Wong 'human'	
10	Rerambutan pule	Alstonia scholaris	Rerambutan 'hair'	
11	Ketumbar bebolong	Coriandrum sativum	Bebolong 'hole'	
12	Kesuna tunggal	Allium sativum	Tunggal 'single'	
13	Kemiri lanang	Aleurites moluccanus	Lanang 'male'	Sex
14	Akar hawa beringin	Ficus benjamina	Hawa 'female'	
15	Akar hawa canging	Erythrina ovalifolia Roxb.	Hawa 'female'	
16	Cekuh lanang	Kaempferia galanga	Lanang 'male'	

Thus, for example term (1) *akar belimbing besi putih* consists of *akar* 'root of a tree' and its colour: *putih*, 'white'; (2) *akar jerungga putih* consists of *akar* 'root of a tree', and the colour, *putih* 'white'; and (3) consist of the plant name, *ketan*, and *merah* 'red'. In medicinal plants can reflect the smell of the plant, consisting of the name of the tree (4) basil and fragrant. Basil is a type of tree and fragrant is a fragrant smell. *Akar baliga harum* consists of *akar* 'root of a tree' and its smell: *harum*, 'fragrant'. The sex of the plant is important for medicinal purposes, this is specified, as in examples 13 and 14; 15 and 16. Term (6) *sumanggi gunung* consists of *sumanggi* 'clover' and a shape of *gunung* 'mountain'; (9) *don dapdap wong* consists of *don dapdap* 'Erytherina variegata' and a shape, *wong* 'human'.

B. Language Rituals as Treatment in the Form of Mantras

Some of the incantations described above aim to show that Balinese people still rely on traditional medicine. Treatment in the form of mantras still exists today (see Satrianegara et al., 2021). It is based on the belief of the Balinese people that all diseases can occur not only naturally (diagnosable medical diseases) but also caused by evil spirits, non-medical ones that medical devices cannot detect, (cf. Tsing, 1988). Therefore, special prayers are needed to treat it (Eiseman, 1990). *Balian* uses each incantation based on the type of disease you want to cure, as described below.

1. Mantra 1 intends to treat babies who cries every night.
2. Mantra 2 in treating leprosy
3. In the treatment of fever and restlessness, there is a feeling of unconsciousness, extreme heat in the spine, and in the stomach
4. In treating Tikna kuta merana
5. In treating Sangar tiwang tulang
6. In treating pemali (evil spirit disturbance)
7. In treating kaki lupa (numb feet)
8. In treating missing (melena)
9. Mantras for strong medicine with women who want to have children
10. In treating myopic eyes

In addition to language rituals or treatment in the form of prayer, each treatment has offerings. The Balinese, who are predominantly Hindu, always offer offerings at every prayer. However, the offerings used in this treatment have special criteria or different compositions when used during prayers. The composition of the offerings used is explained as follows based on the type of disease.

1. The offerings for sangar tiwang disease are rice 1 plate of processed pork, cooked and raw, offered at the cremation site, at night ask Sang Hyang Durga for life.
2. Offerings for medicine to protect the souls of babies suffering from diseases, namely canang 1, daksina 1, uang 777.

C. The Ecosophy of Lontar Usada Putih of Balinese Community

Socio-Culture Values

The system of traditional medicine in Indonesia has developed since ancient times and developed in each region,

including Bali. Balinese *Lontar usada* is not only physical evidence of traditional medicine but also evidence of the interrelationship of Balinese speakers with their language environment, language ecology (see Mbetse & Genua, 2017). In other words, Balinese *lontar usada* is an ecotext that contains systems of medicine, medicinal ingredients and traditional healing methods that have meaning and an important position in the repertoire of traditional medicine in Bali.

In this study, social, cultural, and religious values are contained in the *lontar usada* texts. Religiously, *lontar usada* is a reflection of how Hindus in Bali believe that getting sick is Shang Hyang Widhi's will, as much as they believe that *usada* treatment is also a manifestation of Shang Hyang Widhi's greatness who can cure various types of diseases (see Singh et al., 2021). It is proved by ceremonies or rituals that are part of the technique of treating or healing psychological diseases, abstract diseases and diseases related to the social and bio-culture of Hindu society. According to Arsana et al. (2020), the Balinese believe that health and disease occur due to a combination of *shtula sarira-suksma* and *sarira-antah karana sarira* (balance between body, mind, and soul). Then, regarding social function and culture, traditional *usada* medicine is a tradition (hereditary) and local wisdom of the Balinese people who uphold Hindu religious values. In addition, the relationship between Balinese *lontar usada* with the environment and medicinal plants is in line with the phrase "Kembali ke Alam", which means returning to the nature to maintain the harmony with nature (Asmiwyati et al. 2015). Thus, preserving natural resources can develop cultural values regarding plants that can be used as traditional medicinal ingredients.

## VI. CONCLUSION

In conclusion, *lontar usada* is not only a documentation of traditional medicinal recipes but as proof that the Balinese have always known nature-based medicine. Traditionally, the beginning of medical research came from traditional medicine. Therefore, local wisdom, such as traditional medicine, should be preserved (see Sujarwo et al., 2016). In this study, some of the treatments for *usada putih* ejection have been proven by medical research. In *lontar usada putih*, there are various ways to treat illnesses, from medical and non-medical diseases (diseases caused by evil spirits). Medical diseases are dominated by colds, coughs, myopic eyes, difficulty defecating, swollen feet, leprosy, etc. (see Foucault, 2003). Meanwhile, from non-medical diseases, there are diseases such as pemali (Disturbances by evil, ghost and other spirits), *sakit penjaga bayi* (Babies disturbed by spirits). Thus, the relationship between language and the environment, and conversely, the environment and language are very close and cannot be separated (see Alexander & Stibbe, 2014; Utami, 2017). It can be seen from application of mantras, rituals (upakara), offerings, and medical plants.

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