

Get to Know the Language of the Environment through Traditional Balinese Medicinal Plants

Ida Bagus Yoga Danu Darmawan
Universitas Warmadewa

ABSTRACT

Traditional medical plant is really potential to be extracted from information existing in Bali's *Lontar Usada* which contains the treatment system, medicinal ingredients and how to treat them. As time has evolved, information and knowledge about traditional medical plants have decreased in the current generation. The aim of this research is to present the results of the *Usada* plants conservation by exploration and ethnobotanical knowledge of South Bali and its collection. The research was conducted by exploration and inventory of medicinal plants based on key correspondents (Ida Pedanda, Pemangku dan Balian) to be collected. The result of the research is collected 30 collections numbers, where some of them are new to be collected. Based on information from the key correspondents, it is clear that the wealth of local wisdom in medicine can be seen from the variety of information regarding the uses and procedures for use of each plant. Hopefully, with the conservation and collection of medical plants, the public will be able to find out various kinds of medical plants which are potential and to take part in preserving them.

Keywords: Traditional plant, local wisdom, medical, collection.

BACKGROUND

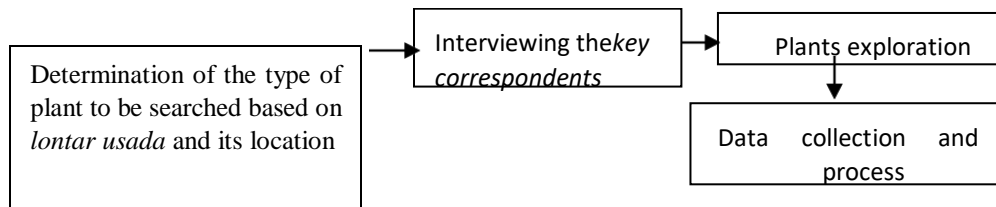
Around 90% to 95% of pharmaceutical raw materials (ethical drugs) are currently estimated to have been produced by around 225 companies in Indonesia, they are still imported from original producers who have the patent. As a result, since 2000 the price of drugs has become expensive, it means that health is a luxury which is increasingly expensive (Dhomiri, 2000 in Sukara, 2002). Lately, the concept of life back to nature has become a choice. People were re-introduced to make a living pharmacy in the yard or in the garden by planting medical plants for the family. Medical plants are a group of plants generally used as raw materials for medicine (Syahid, 2002). Traditional medicine is an asset of the Indonesian people which is known for its rich biodiversity.

Various traditional medical systems have developed in each region in Indonesia since ancient times. Likewise, in Bali, Balinese people have traditional medicine (indigenous medical knowledge) which is very rich in *Lontar Usada Bali*. *Lontar Usada Bali* is a manuscript containing a system of medicine, medicinal ingredients and traditional methods of treatments that have meaning and an important position in the realm of traditional medicine in Bali. *Lontar usada* is also a reflection of how Hindus in Bali believe that illness is the will of *Sang Hyang Widhi*, as much as their belief that treatment by *usada* is also a manifestation of the greatness of *Sang Hyang Widhi* who is able to cure various types of diseases. The word *usada* comes from *ausadhi* (Sanskrit) which means plants containing medicinal ingredients. This knowledge is originated from India, which then it spreads to Bali along with the development of Hinduism in the 5th century AD. *Lontar usada* is a manuscript containing a system of medicine, medicinal ingredients, and traditional methods of treatment in Bali written on palm leaves/*siwalan* (Borassus).

As time goes by, the young generation is increasingly reluctant to explore the potential existing in *Usada Bali*, so that this knowledge, even the simplest forms of treatments gradually decrease from generation to generation. The same thing also seems to occur with various types of plants used in the treatment process. If the natural habitat of these plants are lost and it causes on the extinction of these species, then we will also lose the source of medical raw materials in the future. Therefore, the aim of this research is to present the results of the *Usada* plants conservation by exploration and ethnobotanical knowledge of South Bali and its collection.

RESEARCH METHOD

Exploration and research for the conservation of medical plants are conducted in the South Bali area, namely South Denpasar District (Sanur, Sidakarya, and Serangan village). This research method is quantitative conducted by obtaining the information from Ida Pedanda's griyas, pemangku's/ balian's places. The information was obtained by interviewing them. The information was recorded while interviewing and then they are collected. There are several priority criteria for plant species collected, they are: plant species that have a suitable place to grow, experience scarcity in nature, and are widely used or have economic value and have not been cultivated.



Picture 1. Flow chart of exploration and research activities carried out

The types of priorities are then found through exploration activities by using the services of key correspondents as well as collecting various information about the procedures for use of the medical plants by conducting interview. Further exploration results are prepared as collections to be planted in a *Usada* park area after going through standard procedures in the collection protocol.

DISCUSSION

Exploration of medical plants succeed in collecting as many as 30 collection numbers. The search for plant collections was conducted in people's yards and fields. The search in the yard focused on medical plants that have been cultivated such as plants from the tribe of ginger (zingiberaceae) namely *jae pait* (*zingiber officinalis* Rosc) which has dual functions as a medicine or the benefit of the beauty of the yard or as a complement to Hindu religious ceremonies such as *Kembang Sore* (*Mirabilis jalapa* L.). Each collection was searched for five specimens to prevent high plant mortality before planting.




Several types of plants that have been collected, including including rare or threatened plants in nature, namely: *Belimbing Besi* (*Averrhoa carambola* Linn.), *Belimbing Buluh* (*Averrhoa blimbi* Linn), *Juwuk lengis* (*Citrus aurantifolia* Sw.), *Pule* (*Alstonia scholaris* (L.) R.Br. and *Pinang* (*Areca cathecu* L). According to Sastrapradja (1975) in Sutisna mentions *A. carambola*, *A. blimbi* and *C. aurantifolia* status are eroded in nature or indeterminate which includes clear species undergoing a process of scarcity but the actual state of information is inadequate. *A. A. scholaris* is popular in Bali with the name *pule*, this plant is one of the important plants for Balinese Hindus. The wood of this plant is believed to have magical and religious values, so it is widely used as one of a tool of ceremonial means, namely as a material for making masks, the need for wood has never subsided because ceremonial activities are one of the part of the Balinese Hindu religious life. In addition to the wood, the leaves of this plant are also used in the *Pitra Yadnya* ceremony as one of the components found in the offerings / offerings, which is used as a heat medication. Likewise, with bark and roots that can be used as medicinal ingredients. With the high utilization of this plant without being accompanied by good management, the community began to feel difficulty in obtaining ceremonial facilities and meeting the needs of handicraft raw materials, especially those using these plant wood raw materials. In other words, this plant is starting to be difficult to find in nature, it is not even possible that someday plants that have been included in the criteria of "prone" according to this IUCN (Anonymous, 2004) will be destroyed in nature if the above conditions continue without conservation efforts. *A. cathecu* based on a report from Bappenas in 2003 stated that this plant was included in several medicinal plants which were categorized as rare.



The collection materials obtained are mostly included in the family Euphorbiaceae. There is a new type of collection in the collection of medicinal plants namely *Coccinia cordifolia* Gogn (Paspasan

ND.), *Phyllanthus niruri* Blanco. (Kemeniran ND), and *Polanisia viscosa* L. (Buangit ND). This collection material consists of the family verbenaceae, araceae, begoniaceae, asteraceae, rubiaceae, euphorbiaceae, myrtaceae, zingiberaceae, arecaceae, lythraceae, piperaceae and boraginaceae, but the most common ones are from the family zingiberaceae.







In the collection, found a number of new collections of medical plants such as: *Paederia foetida* L. (Obstacle ND), and *Syzygium aromaticum* L. (Clove ND). It is also obtained material collection of 8 types of medical plants. One new collection in the collection of drug parks is *Gaultheria leucocarpa* Bl. Whereas two new collections, namely *Vitis quadrangularis* Cord. and *Polygonum chinense* Houtt. Exploration material in the form of seeds will be sown in a tub. Here are the types of seeds that are sown.






On the occasion of exploration we had the opportunity to see firsthand one of *Lontar Usada* that were stored in the *Ida Pedanda griya / pемangku* and *balian* residences. *Usada Bali* traditional medicine is carried out by people who already have intellectual knowledge in the science of leakage and have gone through a process of *mesakab dewa, ekajati or dwijati*. *Usada* Medicine is a conscious learning of medical science, either through other people or self-study through *usada* ejection. The people mentioned have knowledge of medicinal plants, they understand how these plants work in medicine. Table 1 shows the cultural wisdom of the Balinese people in their diverse treatments, so it needs to be preserved through cadre or the like is the knowledge and abilities of these traditional healers. Exploration of information regarding the use of various types of plants in *usada* palm still needs to be done as an effort to introduce and preserve the wealth of medical plants used by balinese people. With the collection of medical plants, it is hoped that the public will be able to know and be more familiar with various kinds of potentially medical plants and participate in preserving them.

NO	PLANTS NAME	LATIN NAME	BENEFITS	THE USES	PICTURE
1	Papaya	<i>Carica papaya</i>	For intestine health (Seeds)	Let the seeds dry and grind it. Mix 1 tablespoon of dried-papaya-seeds in a glass of water, then boil it.	 <p>Source: https://cutt.ly/0pY1sdw</p>
2	Coconut	<i>Cocos nucifera</i>	For tootache (Shell)	The shell burned and then uses its oil as a painkiller toothache.	 <p>Source: https://cutt.ly/opY9hGw</p>
3	Coffee	<i>Coffea</i>	High blood pressure (Leaf)	Eat the coffee leaf as a vegetable	 <p>Source: http://tiny.cc/v4ztrz</p>






4	Garlic	<i>Allium sativum</i>	Relief against cough (root)	Roast a clove of garlic and have it with a spoon of honey before going to bed	 <p>Source: https://bit.ly/2AuOrNG</p>
5	<i>Kecemcem</i>	<i>Spondias pinnata</i>	Body pain (leaf)	Use the leaves of <i>kecemcem</i> to make <i>loloh</i> . Mix it with <i>jarak pagar</i> leaf, betel leaf, cinnamon, <i>dadap</i> leaf, coconut, and palm sugar.	 <p>Source: https://bit.ly/38nxHo9</p>

6	Turmeric	<i>Curcuma longa</i>	Fever relief (Root)	Mix ½ teaspoon of turmeric and 1 teaspoon of black pepper into hot milk. Drink it twice a day.	 <p>Source: https://cutt.ly/KpULLdh</p>
7	Onion	<i>Allium cepa</i>	Diarrhea relief (root)	Onion is boiled with a mixture of dried pomegranate skin, fennel, and <i>pulosari</i> . Drink the mixture.	 <p>Source: https://bit.ly/38sTRW6</p>
8	Wax gourd (<i>Bligo</i>)	<i>Benincasa hispida</i>	Urinary tract infection (<i>anyanganyangan</i>) relief (fruit)	The fruit is mixed with pandanus leaves, pomegranates, white hibiscus roots, mulberry roots and pour some coconut oil.	 <p>Source: https://bit.ly/3eY0F0i</p>
9	Tree Sorrel	<i>Averrhoa bilimbi</i>	Ulcer relief (fruit)	Drink the mixture of tree sorrel, lime water, and honey	 <p>Source: https://bit.ly/3iw0wDA</p>

10	Tamarind	<i>Tamarindus indica</i>	Stomachache relief (fruit)	Bake tamarind and salt then add some water. Drink the mixture.	 <p>Source: https://bit.ly/3gssu17</p>
11	Brotowali	<i>Tinospora tuberculata</i>	Tonic (stem)	Eat the stem of brotowali tree.	 <p>Source: https://cutt.ly/XpIqJel</p>
12	<i>Sambang darah</i>	<i>Excoecaria cochinchinensis</i>	Anaemia relief (leaf)	Boil the leaf and drink it	 <p>Source: https://cutt.ly/vpIs0VK</p>
13	Ginger	<i>Zingiber officinalis</i>	Repel evil spirit (whole part)	Plant it in the homeyard	 <p>Source: https://cutt.ly/jpIngYx</p>
14	Dadap	<i>Erythrina variegata</i>	Fever relief (Leaf)	When you have a fever, put the <i>dadap</i> leaf on your stomach	 <p>Source: https://cutt.ly/lpIW4cM</p>
15	Guava	<i>Psidium guajava</i>	Diarrhea (Leaf)	Boil the guava's leaves and drink it.	 <p>Source: https://cutt.ly/tpIUebE</p>

16	Sweet potato	<i>Ipomoea batatas</i>	Blood glucose (Root)	Boil the the root and eat it.	 <p>Source: https://cutt.ly/vpIODjQ</p>
17	<i>Jarak Pagar</i>	<i>Jatropha curcas</i>	Wound medicine (sap)	Put the sap on your wound.	 <p>Source: https://cutt.ly/6pISk2p</p>
18	Bay leaf	<i>Syzygium polyanthum</i>	Rheumatism (leaf)	Boil the leaf and drink it everyday day.	 <p>Source: https://cutt.ly/gpIDVL6</p>
19	Palm tree	<i>Arenga pinnata</i>	Drunk relief (Leaf)	Boil the leaf and drink it.	 <p>Source: https://cutt.ly/ypIHcUg</p>
20	<i>Sembung Hutan</i>	<i>Blumea balsamifera</i>	Relief against cough (leaf)	The leaf is mixed with galangal and soaked rice, chews it together and blurted it out to the neck.	 <p>Source: https://cutt.ly/MpILyWy</p>

21	Cheese fruit	<i>Morinda citrifolia</i>	High pressure relief (Fruit)	Mix the cheese fruit with <i>gamongan</i> and curcuma, eat the essence.	 <p>Source: https://cutt.ly/QpICU1o</p>
22	Turmeric	<i>Curcuma longa</i>	Disminorhea relief (root)	Shred the root and then squeeze it out. Boil the water with tamarind, sugar, and salt. Drink it.	 <p>Source: https://cutt.ly/kpIBSi2</p>
23	Champak	<i>Michelia champaca</i>	Fever relief (leaf)	Boil the champak' leaf and drink the water twice a day.	 <p>Source: https://cutt.ly/0pI9CoP</p>
24	Starfruit	<i>Averrhoa carambola</i>	Asthma (fruit)	Mix starfruit with turmeric and galangal, pound it and blurted it out to the chest.	 <p>Source: https://cutt.ly/ypI37GL</p>
25	God's crown	<i>Phaleria macrocarpa</i>	Diabetes medicine (Use the flesh only)	Let dry the flesh of god's crown fruit and bay leaf. Boil both of them and add some honey. Drink it as a tea.	 <p>Source: https://cutt.ly/gpO45QD</p>

26	Lempuyang	<i>Zingiber Zerumbet L</i>	Alergic relief	Boil grated- <i>lempuyang</i> and add some sugar. Drink it every day.	 <p>Source: https://cutt.ly/bpPiKQP</p>
27	Galangal	<i>Kaempferia galanga</i>	Influenza medicine	Mash the galangal and two tailed pepper leaves, add some water. Then rub it on your nose.	 <p>Source: https://cutt.ly/upPI3Iq</p>
28	Neem tree	<i>Azadirachta indica A. Juss</i>	Influenza medicine (leaf)	Mash the neem tree leaves with the onion and add some salt. Then squeeze them. Drink the juice, while the dregs is rubbed on patient's body.	 <p>Source: https://cutt.ly/ipPv72K</p>
29	black plum	<i>Syzygium cumini</i>	Diabetes medicine (fruit)	Mash the black plum fruit and boil it. Drink it three times a day.	 <p>Source: https://cutt.ly/apAQ6Ug</p>
30	Betel leaf	<i>Piper betle</i>	Fluor albus	drink or use boiled water betel leaves to wash your vaginal area with betel leaves regularly for twice a day.	 <p>Source: https://cutt.ly/npAYfJD</p>

CONCLUSION

Traditionally, medicinal knowledge from ancient times uses a lot of plant material. Information that is still documented about the benefits of plants for usada in Bali is contained in the Usada Lontar Bali. The limited knowledge of usada in lontar Bali is largely understood by certain people, namely: Ida Pedanda, pemangku, and balian. The results of exploratory studies show that of the 30 collection numbers obtained there are endangered plant species, namely: *Averrhoa carambola* Linn., *A. blimbi*

Linn, *Citrus aurantifolia* Sw., *Alstonia scholaris* (L.) R.Br., and *Areca cathecu* L. Ex-situ conservation of the *usada* plant collection is expected by the public to be able to know various kinds of plants that have potential for medicine and to participate in its preservation.

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