

THE SYSTEMIC, HOLISTIC, INTERDISCIPLINARY AND PARTICIPATORY (SHIP) APPROACH SUPPORTS THE CONSERVATION PROGRAM OF MEDICINAL PLANTS IN BALI

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Development process brings the positive as well as negative impacts. Among others, the negative impacts include the extinction of some medicinal plants. The research issue is what strategy can be used for preserving the medicinal plants while little attention is given to them. A research action was thus started for preserving and conserving these plants. Methods used were participatory observation, field surveys, and demonstration-plots. The action consisted of: an awareness program, a preparation phase and the establishment of a park of medicinal plants. In doing that, the Systemic, Holistic, Interdisciplinary and Participatory (SHIP) approach was applied. Up to now, the results found are: 1) the awareness program was conducted several times; 2) two pieces of lands were provided from the provincial government of Bali and from the local community; 3) the field surveys identified about 200 kinds of medicinal plants in the house yards, government offices, hotels and median strips of roads; 4) in the traditional medicine texts (lontar), more than 500 kinds of medicinal plants were found to be cited; 5) the medicinal plants were classified into wood-en trees, shrubs, grasses, watery plants, epiphytes and parasitic plants. It is concluded that preserving and conserving the medicinal plants in Bali is urgent and that there is a willingness to do that with the active support of the stakeholders. It is encouraging that good examples have already been established in Ubud, Tampaksiring and Karangasem. Therefore, it is recommended to establish a medicinal plants park in Bali since it will have multiplier effects.

Key words: medicinal plants; conservation; holistic approach; participation, Bali.

INTRODUCTION

The existence of the traditional medicine and medicinal plants in Bali is well known. The Balinese traditional medicine and medicinal plants constitute part of the Balinese culture. There are so many medicinal plants growing in Bali; it is apparently due to the climatic reason. One of the traditional literature *Taru Premana* states that there are about 133 kinds of medicinal plants, describing incompletely their characteristics and effects. *Usadha Dalem* prescribes many regimens using more than 205 kinds of medicinal plants (Adiputra, 2004a).

In fact, as a consequence of development, there is a change in land use, from agriculture to other purposes (Manuaba, 2005). A trend is seen that there is no more back-yard in the compound of a modern Balinese house. Therefore, the area for the growth of medicinal plants is also disappearing. In Bali, the modern health facilities with services such as health centers are more accessible and easy to utilize. As a result, the use of traditional medicine and the medicinal plants is not so popular as before.

On the other hand, the scientific research on the medicinal plants is seldom conducted. We do not know yet the efficacy of medicinal plants that have been used traditionally (Adiputra, 1999). In fact, there are so many medicinal plants prescribed in the traditional texts (Adiputra, 2003). It is nec-

essary to collect scientific data so as to support the usage of existing medicinal plants for relieving the illnesses in Bali; this would be useful for utilizing them for pharmaceutical formulations. But, unfortunately, the data gained from research are very few. As time goes so fast, these conditions may be associated with the extinction of some medicinal plants (Adiputra, 1999). This is really deplorable. Therefore, it is necessary to embark upon the idea of preservation and conservation of the medicinal plants in Bali. In doing so, the role and contribution of all the parties concerned is essential.

METHODS

The subjects of the study were the medicinal plants in Bali that were planted in a medicinal plants park. The research activities consisted of three phases, i.e. the preparation phase, an awareness program and the establishment of the medicinal plants park. In the preparation phase, the existence of medicinal plants was literally searched through the available sources such as the traditional textbooks (*lontar usadha*). Twenty *lontar usadha* were searched. The survey was conducted at 20 house yards, 10 hotels yards, 10 government office yards and five median strips of roads in Denpasar and Badung areas. The goal was to find out the medicinal herbs planted as horticulture. In the awareness program, all information gathered in the preparation phase was transferred in the forms of articles, oral presentation in several meetings at local, national and international levels. At the village level, a small group discussion was conducted. Formal and informal approaches were also taken involving villagers, government officers, foreigners and NGOs. The SHIP (systemic, holistic, interdisciplinary, participatory) approach was applied in every effort.

For the data collected, the descriptive analysis was conducted.

RESULTS

The traditional textbooks (*lontar usadha*) studied are presented in Table 1. The medicinal plants cited in the sources ranged from 27 to 415 kinds and were prescribed for treating different kinds of diseases.

Table 1. Sources of knowledge (*lontar usadha*) studied and related information.

No..	Name of <i>usadha</i>	Page	Plants	Transcripts	Translated	Translators
1.	U. Darnosada	8	108	yes	yes	team
2.	U. Dalem	33	205	yes	yes	team
3.	U. Tiwang	37	179	yes	yes	team
4.	U. Yeh	14	63	yes	yes	team
5.	U. Gering Agung	26	84	yes	yes	team
6.	U. Edan	188	105	yes	yes	team
7.	U. Ceraken Tingkeb	39	213	yes	yes	team
8.	U. Anda Kecacar	39	119	yes	yes	team
9.	U. Mala	7	27	yes	yes	team
10.	U. kuranta bolong	30	190	yes	yes	team
11.	U. Bebahi	152	154	yes	yes	team
12.	U. Semaratura	43	81	yes	yes	individual
13.	U. Ratuning Usada	51	89	yes	yes	team
14.	U. Kalimosada	7	95	yes	yes	team
15.	U. Taru Premana	26	133	yes	yes	individual
16.	U. Lara Kamatus	19	70	yes	yes	combined
17.	U. Upas	111	123	yes	yes	-
18.	U. Cukil Daki	49	188	yes	yes	team
19.	U. Gelagah Puwun	62	97	yes	no	individual
20.	U. Dalem Jawi	78	415	yes	yes	team

Results of the field surveys are presented in Table 2. The herbs planted in those places varied from 83 to 185 kinds. Among those plants, 36.4-79.6 % belonged to the medicinal plants.

Table 2. Survey results of the medicinal plants in house yards, hotels, offices and median strips of roads in Denpasar as horticulture. Numbers in brackets show the number of samples selected.

No.	Place	No. of plants found	Percentage of medicinal plants
1.	House yards (n=20)	105	66.3
2.	Government Offices (n=10)	149	38.5 – 79.6
3.	Hotels (n=10)	185	48.9 – 78.9
4.	Median strips (n=5)	83	36.4 – 71.4

In the scientific meetings conducted several times at different places, responses were collected from the audience. Information was disseminated to the audience regarding the names of plants, the effects of the plants, how to use them for medicine and why the plants should be conserved. Their responses in regard to the conservation program of medicinal plants were then collected. The results are presented in Table 3.

Table 3. The scientific meetings conducted to promote the medicinal plants preservation and conservation program.

No.	Participants	Place	Responses
1.	Local people	Penglipuran Village	enthusiastic
2.	Scientists	Denpasar	positive
3.	Foreigners (several times)	Denpasar	cooperative
4.	Health personnel	Denpasar	enthusiastic
5.	Officials	Denpasar	agreement for budget allocation for research

DISCUSSION

In the scientific meetings, several methods were applied such as seminars, dialogue, workshops and small group discussions. In each of these meetings, the general principles of SHIP (systemic, holistic, interdisciplinary and participatory) approach was applied (Manuaba, 2005; Manuaba, 2006). Comprehensive means of the approach for looking into the existing problems were applied. Attempts were made to classify the root problems in the subsystems and sub-subsystems. In applying the holistic means in viewing the existing problems, the wide angle perspective was focused on; the goal of the discussions was to achieve a better solution. Interdisciplinary means have been stressed from the beginning to benefit from the contributions from other disciplines in tackling the problems encountered. Participatory means were attached importance since every stakeholder should be actively involved in dealing with the case in hand. The approach was always given a special emphasis for enhancing the spirit to work together in the form of a solid teamwork (Caple, 2005; Manuaba, 2005; Manuaba, 2006).

In every meeting, there were positive enthusiastic or cooperative responses from the audience or participants. Everybody seemed to understand the importance of the conservation and preservation program of the medicinal plants. The reasons behind have been their sustainability as an asset for scientific research, an asset for tourism, the environmental conservation, the aspect of socio-cultural heritage and business as well. In anticipating the positive responses from the audience, each meeting was usually followed by a workshop with the SHIP approach (Manuaba, 2005; Manuaba, 2006). Every participant was given a chance to participate freely from the beginning until the end.

In regard to the preservation and conservation of the medicinal plants, at least two foreigners living in Bali had established the pilot project for medicinal plants parks, located in Tampaksiring of

Gianyar Regency and in Karangasem Regency. The owners earnestly offered their pilot projects for further studies or as a demo-plot for others.

The local people also exhibited the same responses. A demo-plot on the medicinal plants was established in Banjar Tunon, Mambal of Badung Regency by a female Balinese agricultural engineer. She collected more than 300 medicinal plants. She also offered a course on herbal medicine and invited researchers to study medicinal plants in her collection.

From a house-to-house survey in Denpasar Municipality, it was found that some of the medicinal plants were used as horticulture. Most of the households knew that the horticulture planted belonged to medicinal plants, but mostly they had never been used as materials for medicine for relieving the illness; only 1,9 % had tried to use medicinal plants as medicines.

The idea of establishing the medicinal plants park of Bali was enthusiastically responded by the local people of Penglipuran Village. In a small group discussion conducted there, the head of village offered one hectare of the communal land to be used for this purpose. The villagers were so interested in knowing whether many of the plants growing in their surroundings belonged to the medicinal plants. This offer is still kept till now.

A good response has also been shown from the Badung Regency Governor. On that occasion, one of the officers showed the land located in Blahkiuh Village in District of Abiansemal. As the first step, 50 acres were offered for establishing the park. Other 50 acres were also promised for additional use. Unfortunately, this agreement is no longer available since the Badung Regency Governor was replaced by a new person. The response was really a positive one representing a reflection of the participatory approach conducted (Wilson et al, 2005). In enhancing the beneficial effect of the program, all aspects of the local cultural variables must be taken into consideration (Kaplan, 2004; Moray, 2004; Waterson, 2005).

Another finding in the field indicates that some of the medicinal plants of Bali are now used for horticulture. They are planted in every office in Badung Regency and Denpasar Municipality (Adiputra, 2006), in every prominent hotel in Badung and Denpasar (Adiputra, 2005c), and along median strips and highways (Adiputra, 2005a). Some of the scarce herbs have been planted for horticulture. This is a good and wise practice to support the preservation and conservation program of the medicinal plants in Bali.

This is also supported by the fact that the Balinese cannot be far away from the flowers in their lives. Flowers are important materials for offerings, and therefore the Balinese need the flowering plants. The flowering plants belong to ceremonial plants. It should also be noted that a new dimension is provided as most of the medicinal plants belong to the ceremonial plants (Adiputra, 2005b), due to the significant role of the flowers, leaves and fruits in religious ceremonies.

Meanwhile, the Balinese are so familiar with the plants that have an economic value. The plants used for main food stuff are rice, potatoes, sweet potatoes and cassava; as vegetables are most of the leguminosaceae (common cowpea, broad bean, kidney bean, pigeon pea, pea nut); and young jack fruit; as sauces: ginger, *Kaempferia galangal*, turmeric, onion, red onion and chili. Some fruits are also used as appetizers, while some leaves of the plant are used for flavor as reported by Adiputra (1999).

In realizing the medicinal plants park of Bali, a support is needed from everybody. The willingness from the government, stakeholders, academia and society is needed. The most difficult thing is to get the funds for starting the project. Some medicinal plants are easier to get, but still some others are difficult to collect, especially for the extinctive plants. Nevertheless, it is timely to start the project, as otherwise more medicinal plants will be disappearing.

If the medicinal plants park could be realized in Bali, the park becomes a valuable asset in the future; for global collaboration in research (particularly for the tropical medicinal plants), as a tourist destination area and from educational points of view. Some foreign experts have proposed active collaboration for the project.

CONCLUSIONS

The conclusions that could be drawn are as follows. (1) It is urgent to establish corrective measures to avoid extinction of the medicinal plants in Bali. (2) There are some encouraging factors for the preservation and conservation project such as the fact that the plants are used now as horticulture and that the Balinese need the plant products in their daily life (flowers, leaves, barks, fruits, seeds and rhizomes) in conducting religious ceremonies. (3) Some of responses from local people as well as foreigners are expected to reinforce the idea. (4) Some efforts have been done for establishing demo-plots for the medicinal plants park in some areas. (5) The park in the future will become an asset for tourism and for collaborative research on medicinal plants.

Based on the study results, it is recommended that the synergy of stakeholders is essential in making the idea of the medicinal plants park of Bali into a reality.

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