

# The Utilization of Various Medicinal Plants based on the Dayak Community Perspective in The Central Kalimantan as an Education for Sustainable Development

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## Abstract

Indonesia has abundant biodiversity, especially in Central Kalimantan. One of the ways to explore biodiversity in Central Kalimantan is as a biopharmaceutical, but the results of this exploration are very minimally applied as a learning resource. This study aims to explore the medicinal plants typical of Central Kalimantan used by the Dayak people, especially in the field of cosmetic dermatology. This study uses a qualitative research method with an ethnographic approach. The result`s showed that there were 11 plant species that were used by various sub-ethnic Dayak tribes in Central Kalimantan to treat various diseases, especially for skin health and beauty. The results of these studies can be used as a source of learning in lecture activities as a form of continuing education.

### Abstrak

Indonesia memiliki keanekaragaman hayati yang melimpah, terlebih di Kalimantan Tengah. Keanekaragaman hayati di Kalimantan Tengah salah satunya dieksplorasi sebagai biofarmaka, hanya saja hasil eksplorasi tersebut minim sekali penerapannya sebagai sumber belajar. Penelitian ini bertujuan untuk mengeksplorasi tumbuhan obat khas Kalimantan Tengah yang digunakan oleh masyarakat suku Dayak khususnya pada bidang dermatologi kosmetik, hasil penelitian tersebut diharapkan dapat dikembangkan menjadi sumber belajar. Penelitian ini menggunakan metode penelitian kualitatif dengan pendekatan etnografi. Hasil penelitian menunjukkan bahwa terdapat 11 spesies tumbuhan yang dimanfaatkan oleh berbagai sub etnis suku dayak yang ada di Kalimantan Tengah untuk mengobati berbagai macam penyakit khususnya untuk kesehatan kulit dan kecantikan. Hasil penelitian tersebut dapat dimanfaatkan sebagai sumber belajar pada kegiatan perkuliahan sebagai bentuk pendidikan berkelanjutan.

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## A. Introduction

Indonesia has an abundance of biodiversity. Explorations of local plant germplasm as a biopharmaceutical source have often been conducted by Dayak people in Central Kalimantan. It is common for the Dayak people in Central Kalimantan to use plants existed in their environment to treat various diseases; for example, *bajei* (*Diplazium esculentum*) to treat acne, asthma, and tumors (Zannah et al., 2017). The utilization of plants as a medicine by the people has been scientifically proved several times. For example, the use of *pasak bumi* (*Eurycoma longifolia* Jack), to name a few, as an anti-microbe against bacteria of *Bacillus cereus* and *Staphylococcus aureus* (Khanam et al., 2015).

There are more plants used by the Dayak people for medicine, especially for cosmetic dermatology. The utilization is based on knowledge acquired from generation to generation. The knowledge must be preserved as it is part of the community's local wisdom. The exploration of plants used by communities for medicines is also a means for biodiversity conservation if the plants are used wisely.

Wise utilization of natural resources to prevent biodiversity crisis can be applied through sustainable approaches. The sustainable approach application in the education world is known as a concept of Education for Sustainable Development (ESD). ESD is lifelong learning to inform and involve people to preserve the environment so it can be used for humans in the future (Segera, 2015).

The ESD concept implementation in education can be carried out using empirical data from research results as a learning source. One of them is the results of exploration research on the potential of medicinal plant typical Central Kalimantan by the Dayak people. The research results provide information and new insights for college students related to scientific studies and the ESD concept if it is arranged into a learning source of teaching materials in lecture activity. Information presented in the teaching materials is an effort to provide comprehension for students to recognize the importance of preserving biodiversity in the surrounding environment.

The organization of research results in the form of explorations on the potentials of medicinal plants typical Central Kalimantan as a source of learning in lecture activities must be adjusted to the course characteristics to help in improving students' cognitive aspect, affective aspect, and skill aspect. One of them can be applied in the Basic Natural Science course offered in the Study Program of PGSD, FKIP Universitas Muhammadiyah

Palangkaraya. This paper therefore aims to explore medicinal plant typical Central Kalimantan used by the Dayak people, especially in the cosmetic dermatology field to be developed into a learning source as education for sustainable development.

## B. Method

The research was qualitative research using an ethnographic approach. The data collection was conducted with a semi-structured interview with 20 respondents selected using a purposive sampling technique. The research respondents were Dayak people with different sub-ethnics having different knowledge on medicinal plant utilization in the cosmetic dermatology field (skin beauty and health). The data collection was carried out from April to May 2021 to the Dayak people who live in Central Kalimantan, Indonesia.

The research results will be used as materials to compile a learning source of teaching materials. The teaching material preparation will use a development method.

## C. Results and Discussion

Data of the medicinal plants used by the Dayak people in Central Kalimantan were generated based on information from the respondents, who are indigenous Dayak people. The Dayak people in Central Kalimantan consisted of several sub-ethnics spread in the area. The research respondents came from the Dayak tribe with different sub-ethnics. The selection of various sub-ethnics as the respondents was expected to generate a different result that represents all Dayak tribes in Central Kalimantan (Figure 1).

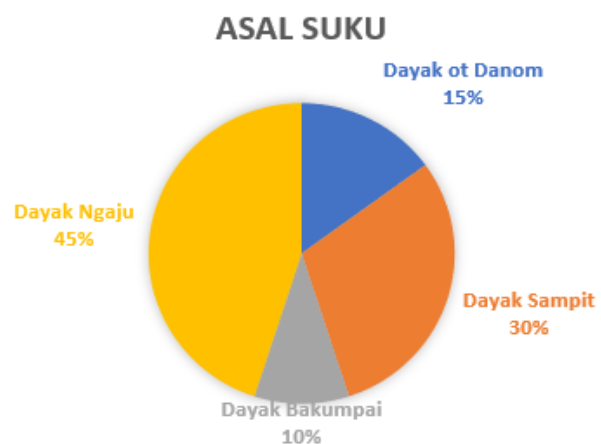


Figure 1 Respondents' Originality

Figure 1 indicates that 45% respondents in the research was from Dayak Ngaju tribe and 30% was Dayak Sampit tribe, 15% from Dayak

Otdanom tribe and 10% from Dayak Bakumpai tribe. Each tribe has its way of fulfilling its daily needs including in the utilization of plants as a medicine (Kuni et al., 2015). Likewise, the Dayak tribe of Central Kalimantan often utilizes natural resources in their surroundings to meet their daily needs.

### The Utilization of Medicinal Plants by Dayak People

Based on the research result, plants used by the Dayak people in the Central Kalimantan as a medicine, especially for skin health and beauty consisted of 11 species (Table 1). The result was derived from interviews with various Dayak sub-ethnics in Central Kalimantan.

The interview results suggest that the Dayak people utilize several plants as medicines, especially for skincare and skin health such as treating acne and scars. The utilization of the medicine plants is based on inherited knowledge.

Parts of plants that are commonly used for medicine include roots and leaves (Akmaliyah et al., 2020). This is consistent with the current research results indicating that the Dayak people mostly use leaves, roots, and tubers for medicine.

The utilization of medicinal plants by communities could bring the relationship between human beings and the surrounding environment closer (Jamshidi-Kia et al., 2018). Equally, the Dayak people have closeness to their surrounding environment since they utilize natural resources in the environment to fulfill their daily needs.

The exploration of medicinal plant utilization based on community knowledge can serve as a new era for future treatment development. Standardization and evaluation of active compounds from herbal medicinal plants can help in achieving the goal (Jamshidi-Kia et al., 2018). The observation results suggested that the Dayak people in the Central Kalimantan utilize various plants as a medicine, especially for skin health.

#### a. Balik angin (*Mallotus paniculatus*)

The Dayak people in the Central Kalimantan use *balik angin* plant to cure acne. The utilization is by fine-grinding the leaves and applying them to the skin with acne.

The community also uses *balik angin* plant to treat other diseases, such as fever and post-natal treatment (Bahaman et al., 2020). Another study stated that the plant has the potential as an anti-oxidant (Maulida et al., 2016).

#### b. Binahong (*Anredera cordifolia*)

The Dayak people in the Central Kalimantan utilize *binahong* plant to cure acne. They use it by

fine-grinding the leaves and applying it to the skin with acne.

A previous study suggested that *Anredera cordifolia* has the potential as an anti-inflammation (Sutrisno et al., 2016). Another study stated that *Anredera cordifolia* has an anti-bacteria potential (Basyuni et al., 2017).

#### c. Kelakai (*Stenochlaena palustris*)

The Dayak people in the Central Kalimantan utilize *kelakai* plant to cure acne. They use it by fine-grinding the leaves and stems and applying it to the skin with acne.

Based on a previous study, *Stenochlaena palustris* has the potential as an anti-oxidant (Ndanusa et al., 2020). Anti-oxidant can prevent various diseases caused by oxidative stress (Rahmawati et al., 2017).

#### d. Bajakah kalalawit (*Uncaria gambir*)

The Dayak people in the Central Kalimantan use leaves from the *Bajakah* plant to treat acne. The method is by boiling the leaves and drinking the boiled water and by fine-grinding the leaves and drinking the juice. Previous research results indicated that *Uncaria gambir* has the potential as an anti-septic of gingival wounds in mice (Dewi et al., 2018).

#### e. Bajei (*Diplazium esculentum*)

The Dayak people in Central Kalimantan utilizes leaves from the *Bajei* plant to cure acne. The method is by fine-grinding the young *Bajei* leaves to release the slime and putting them on the face with acne. Leave it for 5-10 minutes and then wash it with clean water. *Bajei* is believed to be efficacious to treat fever and cough with phlegm (Hermawan et al., 2017).

#### f. Gelinggang (*Cassia alata L*)

The Dayak people in the Central Kalimantan use *Gelinggang* leaves to treat acne and skin fungus on skin. The treatment is by fine-grinding the leaves and putting them on the part of skin with fungus and acne. Moreover, the leaves and flowers are used to treat facial skin by fine-grinding the leaves and flowers and mixing them with cold powder and applying it on the face regularly. Previous research results suggested that it has the potential as an anti-bacteria (Bahi et al., 2014).

#### g. Rumput Japun

The Dayak people in the Central Kalimantan utilizes leaves from the *Rumput Japun* plant to cure smallpox wounds. The treatment is conducted by fine-grinding the leaves and mixing them with cold

powder and applying it on skin with smallpox wounds.

#### **h. Bawang Dayak (*Eleutherine bulbosa*)**

The Dayak people in the Central Kalimantan utilizes *Bawang Dayak* tubers to cure acne. The utilization is by drying the tubers, boiling them, and drinking the boiled water.

Based on the previous research results, *Bawang Dayak* has the potential as an anti-inflammation (Hermawan et al., 2017).

#### **i. Karamunting (*Melastoma malabathricum L*)**

The Dayak people in the Central Kalimantan use *Karamunting* plant to cure acne. The method is by drinking the leaves boiled water.

#### **j. Sangkepok (*Physalis minima*)**

The Dayak people in the Central Kalimantan use roots and leaves of the *Sangkepok* plant to cure smallpox wounds. The treatment is by fine-grinding the roots and leaves and applying them on the skin with smallpox wounds.

#### **k. Rumput bulu (*Ageratum conyzoides*)**

The Dayak people in the Central Kalimantan utilize leaves from the *rumput bulu* plant to treat boils. The utilization is by fine-grinding the leaves and mixing them with lime and applying them on skin with boils. Information related to several plants utilized by the Dayak people in the Central Kalimantan can be used as one of the learning sources in a lecture activity. The objective is to create more meaningful learning activities.

**Table 1. Medicinal Plants used by Dayak People**

No	Local Name	Scientific Name	Benefit	Parts of plant used
1	Balik angina	<i>Mallotus paniculatus</i>	Treat acne	Leaves
2	Binahong	<i>Anredera cordifolia</i>	Treat acne	Leaves
3	Kelakai	<i>Stenochlaena palustris</i>	Treat acne	Leaves
4	Bajakah kalalawit	<i>Uncaria gambir</i>	Treat acne	Leaves
5	Bajei	<i>Diplazium esculentum</i>	Treat acne	Young leaves
6	Gelinggang	<i>Cassia alata L</i>	Treat acne and fungus on skin Face skin treatment	Leaves Young leaves and flowers
7	Rumput japun	-	Treat smallpox wounds	Leaves
8	Bawang Dayak	<i>Eleutherine bulbosa</i>	Treat acne	Tubers
9	Karamunting	<i>Melastoma malabathricum L</i>	Treat acne	Leaves
10	Sangkepok	<i>Physalis minima</i>	Treat smallpox	Roots
11	Rumput bulu	<i>Ageratum conyzoides</i>	Treat boils	Leaves

### **Exploration of Medicinal Plants as a Learning Source**

Exploration of medicinal plants in Central Kalimantan particularly has various benefits. First, it becomes an initial stage for development in the health field, especially skin health and beauty that requires further study through an empirical study.

Second, it can be a learning source in the form of teaching materials, textbooks, popular scientific books and so on that can be used in lecture activities as contextual learning. Contextual learning by using empirical data from the research results can support the improvement of learning outcomes.

Previous studies indicate that textbook utilization by referring to the results of the study on medicinal plants provides positive impacts, namely, it is effective in improving learning outcomes and generating positive responses from users (Lestariningsih et al., 2021).

The exploration of medicinal plants utilized by the Dayak people in this current research is also a form of local potential in Central Kalimantan. The utilization of local potential-based learning sources plays a vital role. A previous study suggested that the utilization of local potential-based learning

media give a positive impact on learning activities (Hartini et al., 2018). Another research result also indicated that the utilization of local potential-based learning media is able to enhance science process skills (Sriyati et al., 2021). Therefore, it is necessary to explore natural resources existing in the environment so they can be used as a more contextual learning activity to improve education quality.

### **D. Conclusion**

The research results indicate that the Dayak people utilize several types of plants to treat various diseases, especially for skin health and beauty. 11 types of medicinal plants are utilized by the Dayak people in Central Kalimantan. The utilization of medicinal plants is according to the knowledge acquired from generation to generation; therefore, further research is required. The current research result is expected to become a learning source in the lecture activities so it will be more concrete.

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