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Traditional Processing of Sikapa (Dioscorea Hispida) as an Alternative Food Source in the Dry Season

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ABSTRACT

The traditional processing of Sikapa (Dioscorea hispida) is a form of adaptation by rural communities to meet the need for alternative food during the dry season. This study aims to document the stages of traditional Sikapa processing carried out by the community of Tapuan Hamlet, Tungka Village, Enrekang Regency. The study used a qualitative descriptive approach through direct observation and visual documentation without conducting laboratory tests. The results showed that the processing process includes nine main stages, starting from raw material selection, peeling, slicing, soaking in salt water, further soaking in running water, steaming, drying, to the final processing into Sikapa Chips and Sokko Sikapa. All stages are carried out consistently based on local knowledge passed down from generation to generation. This management produces food products that are shelf-stable, thus potentially supporting food security during the dry season. This documentation provides a factual description of community practices and serves as a basis for further research that assesses chemical aspects and food safety in more depth.

Keyword : *traditional processing; Dioscorea hispida; local knowledge; alternative food.*

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INTRODUCTION

Food security in rural Indonesia is often threatened by seasonal variability, particularly prolonged dry seasons that reduce yields of staple crops such as rice and increase local food insecurity. This situation requires innovative adaptation strategies through the use of local, drought-resistant food sources. One potential source is Sikapa (Dioscorea hispida), a wild tuber found throughout Java and Sulawesi that has long been recognized by local communities as an alternative food source (1).

Dioscorea hispida, also known as gadung, is a wild tuber that has long been used by people in various regions of Indonesia as a backup food source, especially during times of food shortages during the dry season. This tuber has a relatively high carbohydrate content, making it a potential alternative food source. However, its use requires special processing because gadung is known to contain compounds that cannot be consumed directly (2,3).

In local community practices, various traditional methods have been developed over generations to reduce the levels of these compounds, such as repeated soaking, grating, drying, and processing into semi-finished products. These processes generally aim to reduce bitterness and eliminate undesirable components based on empirical community experience. However, the chemical effectiveness of these traditional methods has not been extensively studied in the laboratory, so information on changes in compounds during processing is still limited (6).

Studies on the traditional processing of Sikapa also contribute to a broader understanding of food diversification based on local resources. Local foods, which are currently needed by the community, can be an alternative in food diversification programs pursued in various national policies (9). Thus, research that focuses on describing traditional processing practices provides significant value for the development of science, cultural preservation, and strengthening community food security.

Changing climate patterns and increasingly long dry periods in some regions make the need for alternative foods increasingly relevant. In this context, documentation of community innovations in processing Dioscorea hispida is crucial, particularly in understanding how traditional techniques can be adapted, modified, or redeveloped for the purpose of local food security. Furthermore, studies of these processing processes can help enrich the literature on local knowledge practices that have been passed down orally (4).Therefore, this study aims to describe the Sikapa management process in Tapuan Hamlet, Tungka Village as an alternative food source during the dry season.

METHODS

Field research was conducted in Tapuan Hamlet, Tungka Village, Enrekang District, Enrekang Regency, South Sulawesi, from July to September 2024.This research uses a qualitative descriptive approach that focuses on research documentation of the traditional processing process of Dioscorea hispida as carried out by local communities. This approach was chosen to gain an in-depth understanding of the stages, practices, and reasons underlying each processing step.

The documented processing procedure consists of nine main stages, namely: (1) Survey and collection of raw materials by selecting tubers based on optimal size and level of maturity; (2) Collection and peeling to remove the outer skin; (3) First stage slicing into thin slices using a traditional sorong tool; (4) First stage soaking for 30 minutes in a salt water solution, then placed in a closed container and left overnight to neutralize the sap; (5) Second stage soaking in running water for approximately 48 hours to dissolve toxic residues; (6) Second stage slicing and steaming specifically for Sokko products; (7) Drying by sun-drying for 4-5 days for chips or 2-3 days for Sokko depending on weather conditions; (8) Final processing in the form of frying for chips or mixing for Sokko; and (9) Packaging and storage of products.

The researcher ensured that the individuals involved understood the purpose of documenting this activity and provided informed consent prior to the processing and documentation collection process. This study is limited by the lack of laboratory testing, so the findings obtained only describe traditional processing and the local perceptions that accompany it, without being able to be used to draw scientific conclusions about chemical content or food safety levels. Therefore, the results of this study are factually descriptive of community practices as a basis for further research.(7)

RESULTS

Observations show that the Tapuan hamlet community applies a consistent and structured series of procedures in processing Sikapa. Visual documentation shows each stage, from collecting raw materials from community land, using traditional tools for initial cutting, to a gradual soaking process using salt water and running water, a special steaming process for the Sokko variety, and intensive drying for several days.

Its products consist of two main products: Sikapa Chips and Sokko Sikapa. Sikapa Chips are made from thinly sliced ingredients that are soaked and dried before being fried, resulting in a crispy texture with a neutral flavor that can last for several months when packaged dry. Sokko Sikapa is a product that is steamed with a mixture of coconut and sometimes sweet potato, dried more quickly, and can be stored as a dry food ingredient or ready-to-eat meal.

There are several stages of implementation in the Attitude management technique:

Sikapa Survey and Taking of Raw Materials for Sikapa Making

Sikapa (Dioscorea hispida) is a type of climbing plant that grows wild in forests. However, in Tapuan Hamlet, Tungka Village, some residents have begun cultivating or planting Sikapa plants on their land.

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Figure 1. The process of collecting Sikapa raw materials at the location or community garden

Collection and Peeling of Raw Materials for Making Sikapa

Sikapa plants that have been harvested are then collected, then cleaned by peeling off the outer skin.

Figure 2. Collection and peeling of Sikapa raw materials

First Stage Slicing

The cleaned raw materials are then cut into small pieces and sliced thinly. The thickness of the slices can be adjusted using a traditional slicing tool called a sorongan. The thinner and more even the slices, the better the quality of the resulting product. The cutting or slicing process in Sikapa production involves two main stages before producing the final product.

figure *3. The first stage of the cutting or slicing process for Sikapa raw materials*

First Stage Immersion

The raw materials that have been cut or sliced then undergo a soaking process. This soaking method using water mixed with salt is understood as part of the community's traditional processing innovation, developed based on local experience and considered appropriate for reducing sap and improving the quality of the material before the next processing stage. The first soaking stage is carried out for approximately 30 minutes, then the material is placed in a closed container and left overnight in accordance with traditional management. This management is in line with several findings in the literature that show that traditional soaking methods for various types of tubers, including gadung tubers (Dioscorea hispida), have the potential to play a role in reducing undesirable compounds through natural washing and diffusion processes. Thus, the procedures used by the community can be understood within the framework of traditional knowledge that shares similar principles with the approaches that have been reported in previous studies.

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Figure 4. The first stage of the soaking process using salt water.

Second Stage Soaking in Running Water

The next step involves soaking the raw materials in running water for approximately two days. Locally, this step helps reduce any remaining sap remaining after soaking in salt water. Using running water for approximately 48 hours aligns with the leaching principle described in the literature, which involves the transfer of dissolved substances from the material to the soaking medium.

Fig.5. The second stage of the immersion process in flowing water

Second Stage of Cutting or Slicing

The next stage is the slicing and cutting process to separate the ingredients for processing into chips and sokko. In making Sikapa chips, the ingredients are sliced into small pieces and then immediately dried in the sun. Meanwhile, to make Sikapa sokko, the sliced ingredients are first steamed before finally being dried.

Figure 6. Second stage cutting/slicing and steaming process.

Drying Process

The drying process for each product varies. Sikapa chips require a longer drying time, around 4–5 days, until completely dry, depending on weather conditions. Meanwhile, Sikapa sokko products only require 2–3 days.

Figure 7. Drying process for Sikapa Chips and Sokko Sikapa products

Results of the product of the raw materials of the attitude

Through the application of traditional techniques and management practices by the community, Sikapa chips and sokko can be stored for long periods. This makes Sikapa a popular alternative food during the dry season. The processing process is carried out without the addition of preservatives, ensuring the product reflects the characteristics of a natural, traditional food based on local wisdom.

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Figure 8. Raw product results in the form of Sikapa Chips and Sikapa Sokko

Final Product Results of Sikapa Processing

The final product of Sikapa processing consists of two types: Sikapa chips and Sikapa sokko. After frying, Sikapa chips can be eaten plain in their original flavor or created with brown sugar flavors. Meanwhile, Sikapa sokko is processed with a coconut mixture and can also be added with sweet potato for a richer, more complete flavor.

Figure 9. The final product results are Sikapa Chips and Sikapa Sokko.

DISCUSSION

The findings of this study indicate that underutilized local resources can be processed into functional foods and food reserves during the dry season through the application of a series of simple processing methods based on local knowledge. Utilizing Sikapa as an alternative food has significant potential to increase food diversification and reduce seasonal food insecurity in communities with access to this tuber.

Traditional management of Dioscorea hispida carried out by local communities shows a consistent series of stages that have been passed down from generation to generation. (10)These stages generally include cutting or slicing the tubers, rubbing or initial soaking in water or salt solution, re-soaking in running water, washing, and drying in the sun. Each stage is carried out with a duration and method adapted to local practices, for example the length of soaking or water changes. (3)

Determined based on community experience regarding the condition of Gadung (Dioscorea hispida) and visual changes in the soaking water. This documentation emphasizes recording the process as it is practiced in the field, without conducting chemical measurements or toxicological assessments. (5)

These findings align with several previous studies examining gadung tuber processing in Indonesia. Estiasih et al. (2022) explained that communities in East Java use a similar processing sequence, from slicing, rubbing, soaking, and drying, to produce processed gadung products such as chips. While that study also highlighted the potential reduction of certain compounds during processing, it was assessed through literature and experimental data, whereas this documentation only describes observed traditional practices. Therefore, the focus of the discussion remains on describing the processing stages and the underlying local knowledge.(5)

Several other sources demonstrate variations in Sikapa processing techniques applied in communities or laboratories. For example, Fauzi and Fisabilillah (2024) examined the effect of soaking time and water flow on the physical and chemical characteristics of gadung. Meanwhile, Imam Syafi'i et al. (2021) explored the detoxification of gadung using microbial fermentation to produce flour that differs from traditional methods. This comparison demonstrates that gadung processing can be carried out using various approaches, both tradition-based and experimental. Field documentation emphasizes that communities practice well-known methods consistently, without the use of laboratory equipment or

additional treatments, thus representing local knowledge and adaptation to alternative food sources during the dry season.(10, 11)

The use of local food sources such as Dioscorea hispida in this study demonstrates strong relevance to global efforts to improve food security and public health. International organizations such as the FAO emphasize the importance of food diversification based on local resources, particularly tubers, as a strategy to increase food security in regions vulnerable to climate change and limited primary food production. In this context, the Sikapa processing practice by the Tapuan community can be seen as a concrete form of local adaptation that aligns with these global recommendations. (14)

Furthermore, food safety is also a crucial concern in the processing of wild plant-based foods such as gadung. The WHO emphasizes that foods containing naturally occurring toxic compounds must undergo appropriate processing to reduce risks to human health. The traditional soaking, washing, and drying processes used by the community in this study align with the basic principles of reducing hazardous compounds through natural physical methods. (14)

It is important to note that in this study no chemical analysis was carried out before or after processing. (9) Therefore, the discussion focuses on describing processing practices as they exist in the field, without making claims regarding changes in compound content or levels of safety for consumption. This approach is in line with the principles of ethnography and documentation of local wisdom, which emphasizes the observation and recording of cultural phenomena and traditional food processing techniques.(8)

Thus, this Management provides a detailed description of how the community manages Dioscorea hispida as an alternative food source during the dry season.(5) This information can be the basis for further research that combines local knowledge and scientific approaches, for example by conducting chemical analysis or food safety

evaluation, to further understand the potential and characteristics of the final products produced through traditional methods. (10. 11)

The findings of this study not only illustrate local practices but also reinforce the fact that local wisdom has a foundation that aligns with scientific approaches and global policies in the field of food security and food safety. This opens up opportunities for the integration of traditional knowledge and scientific research in the development of safe and sustainable alternative foods.(15)

From a food security perspective, innovation in Sikapa management is in line with efforts to achieve the Sustainable Development Goals, especially the second goal to overcome hunger and achieve food security.[12] Utilizing local, drought-resistant foods can serve as a buffer against crop failure and reduce dependence on food supplies from outside the region. In addition, Sikapa processing also provides added economic value for local communities through processed products that have marketability. (13)

CONCLUSION

This study demonstrates that the Tapuan Hamlet community has a practical, traditional technique for processing Sikapa (Dioscorea hispida) into alternative foods such as chips and sokko. The multi-layered process, which includes thin slicing, soaking in salt water and running water, steaming, and drying, produces products with good organoleptic qualities and adequate shelf life. This method aligns with the detoxification principles described in the literature, although this study has not yet conducted chemical verification. Therefore, Sikapa processing has the potential to support community food security during the dry season, and further research is needed to ensure toxicological safety and expand production scale.

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