

Received: Januari 2026	Accepted: Juni 2026	Published: Juli 2026
Article DOI: http://dx.doi.org/10.24903/jam.v10i02.3901		

Assistance in Processing Kokang Leaf *Pupur Dingin* to Increase Product Value Added in Dasawisma Activities in Kota Bangun I Village

Miftakhur Rohmah

Universitas Mulawarman

miftakhurrohmah@faperta.unmul.ac.id

Nike Widuri

Universitas Mulawarman

nikewiduri@faperta.unmul.ac.id

Yulian Andriyani

Universitas Mulawarman

yulian.andriyani@faperta.unmul.ac.id

Abstract

Kokang leaves (*Lepisanthes amoena*) are a native Kalimantan plant that have long been used by local communities as a natural raw material for traditional skin care products in the form of *pupur dingin*. However, their utilization remains limited to personal or household use and has not been developed into products with higher economic value. This situation has led to the emergence of a community-based approach to increase the utilization of local resources through simple processing technologies. This community service activity aims to strengthen the capacity of Dasawisma members in Kota Bangun I Village, Kutai Kartanegara Regency, in processing kokang leaves into value-added products, and to evaluate whether such processing is economically viable at the household scale. The program was implemented using a Participatory Action Research (PAR) approach, involving participatory discussions, hands-on training, and guided production practices. Economic feasibility was assessed using the Hayami value-added method, applied to a standardized household-scale production scenario to provide a realistic estimate of value added. The findings indicate that kokang leaves can be processed into *pupur dingin* using simple, locally accessible technology. The participatory approach was observed to enhance participant knowledge and practical skills, as evidenced by successful product replication during guided training and active engagement in group reflections. The value-added analysis shows that the processing activity generates a positive added value of IDR 9,500 per kg of raw material, with a value-added ratio of 47.50%. This indicates that the activity is economically viable at the household level, despite its modest scale. In addition to modest economic gains, this activity demonstrates two key contributions: the technical replicability of kokang leaf processing at the household scale, and a positive though limited economic return confirmed through value-added analysis. With continued support for production consistency and simple packaging, the processing of kokang leaves into *pupur dingin* has the potential to be developed further as a sustainable community-based economic activity.

Keywords: kokang leaf, *pupur dingin*, value added, community empowerment, Dasawisma.

Introduction

Kokang (*Lepisanthes amoena*) is one of the indigenous plant species widely found in Kalimantan and has long been utilized by local communities for traditional purposes,

particularly in skin care. In Kota Bangun I Village, Kutai Kartanegara Regency, kokang leaves are abundantly available and have long been processed into *pupur dingin*, a traditional cosmetic preparation applied to the skin to provide a cooling effect, reduce irritation, and protect against excessive heat. Despite their wide availability, kokang leaves have not been developed beyond personal or household use, and the economic potential of this traditional product remains largely untapped. Addressing this gap provides the primary motivation for the current community service activity. The continued use of *pupur dingin* reflects the richness of local knowledge in utilizing plant-based resources for daily needs, and constitutes a foundation for developing such resources into productive economic activities.

Previous phytochemical studies have shown that kokang leaves contain various bioactive compounds such as flavonoids, phenolics, tannins, alkaloids, and saponins, which are associated with antioxidant activity and potential dermatological benefits (Fajriyati et al., 2021; Utoro et al., 2025). These findings affirm the scientific basis for the community's traditional use of kokang leaves in skin care and support the relevance of developing *pupur dingin* as a locally appropriate product. From a community service perspective, this justifies assisting the community in improving their existing processing practices rather than introducing entirely new products, while building awareness of the plant's broader economic potential (Rahman et al., 2022).

Despite this potential, the utilization of kokang leaves remains largely limited to subsistence or household-scale use. This condition was confirmed through initial participatory discussions with Dasawisma members in Kota Bangun I Village, who indicated that kokang leaves are abundantly available locally but are processed using simple traditional methods without standardization, proper drying techniques, or appropriate packaging. These observations, drawn directly from community partners, indicate that the economic potential of kokang leaves has not been optimally realized, and the resulting products remain confined to personal and household consumption.

Efforts to enhance the economic value of local resources can be effectively carried out through community empowerment approaches, particularly by strengthening the role of women-based community groups such as Dasawisma. These groups play a strategic role in household management and social activities, making them suitable actors for developing small-scale economic initiatives. Previous studies have shown that participatory approaches and household-based agro-processing activities can improve community capacity and generate additional income (Cornwall, 2021; Widiastuti et al., 2020; Lestari et al., 2019; Nurhasanah et al., 2020; Slamet, 2012).

However, existing studies address these two dimensions separately: studies on kokang leaves focus primarily on phytochemical characterization, while community empowerment studies tend to describe activities in general terms without providing economic evidence of their outcomes. The integration of participatory processing assistance with a structured economic feasibility assessment through value-added analysis in a community service context has not been sufficiently explored. This gap underscores the need for an approach that both strengthens community processing capacity and provides evidence-based economic interpretation of the resulting activity.

Based on these considerations, this community service activity was designed to address two distinct but complementary objectives: (1) strengthening community capacity through hands-on assistance in processing kokang leaves into *pupur dingin* using simple household-scale

technology, and (2) providing an economic interpretation of the activity's feasibility through value-added analysis using the Hayami method. By addressing both dimensions, this activity aims to improve the utilization of local resources and support the development of sustainable household-based economic activities within the Dasawisma network.

Methods

Location and Participants

This community service activity was conducted in Kota Bangun I Village, Kutai Kartanegara Regency, East Kalimantan, with the active participation of participants from two women-based community groups: Dasawisma Teratai Indah and Dasawisma Mawar. These two groups were selected because of their active involvement in household and community activities and their potential to develop small-scale economic initiatives based on local resources.

A total of 28 members participated across both groups, comprising 13 members from Dasawisma Teratai Indah, 10 members from Dasawisma Mawar, and 5 representatives from the local PKK group. The program was then integrated into regular Dasawisma meetings to ensure accessibility, sustainability of participation, and alignment with existing community structures.

Community Service Design

The program was designed using a Participatory Action Research (PAR) approach (Cornwall, 2021) combined with economic evaluation through the Hayami value-added method (Hayami et al., 1987; Hasiani, 2024). In this study, PAR was enacted through three iterative cycles: (1) participatory problem identification, in which community members collectively identified constraints in their current kokang leaf utilization; (2) collaborative action, through which processing training and guided practice were conducted with active participant involvement; and (3) group reflection, in which participants shared observations, challenges, and insights following the production session. This ensured that participants functioned not only as beneficiaries but as active contributors throughout the entire activity.

The implementation consisted of four main stages. The first stage involved identifying local potentials and constraints through participatory discussions. The second stage focused on planning the activity, including the preparation of training materials and formulation of kokang leaf *pupur dingin* at the household scale. The third stage consisted of hands-on training and guided production practices. The final stage involved reflection and evaluation through group discussions to assess technical challenges and opportunities for further development.

Production Scale and Formulation

The production process in this activity was designed to represent a realistic household-scale scenario to facilitate economic analysis. Although the training was conducted using a small demonstration batch, the value-added analysis was calculated based on a standard formulation consisting of 1 kg of fresh kokang leaves and 2 kg of rice as raw materials.

The 1 kg reference formulation was determined through proportional extrapolation from the training demonstration batch and validated through discussion with participants about feasible production quantities at the household level. This scaling approach was applied without changing the processing procedure, ensuring consistency while enabling more practical estimates of production costs, yields, and economic feasibility consistent with the Hayami method and common practices in household-scale agro-processing studies (Hasiani, 2024; Nurhasanah et al., 2020; Yuliani & Prasetyo, 2021).

Materials and Equipment

The materials used in the production process included fresh kokang leaves as the main raw material, rice as the base component, and clean water for washing and soaking. The selection of materials was based on local availability to ensure that the process could be easily replicated by the community.

The equipment consisted of simple household tools such as a mortar and pestle or grinder for grinding, a drying oven (40-60 °C) for moisture reduction, a fine sieve for particle uniformity, trays for drying, and plastic containers for storage and packaging. The use of simple equipment reflects the principle of appropriate technology in community-based processing.

Processing Procedure of Kokang Leaf Pupur Dingin

The processing procedure was carried out at a household scale to reflect practical implementation. Fresh kokang leaves were washed thoroughly to remove impurities, while rice was soaked in water for approximately 24 hours to facilitate grinding.

The soaked rice was then mixed with the cleaned kokang leaves and ground into a homogeneous paste. The mixture was spread on a tray and subjected to an initial drying process at approximately 60 °C for two hours to reduce moisture content.

After partial drying, the material was reground and sieved to obtain a fine powder. Water (approximately 100 mL) was gradually added to form a dough, which was manually shaped into small spherical pellets. The pellets were then dried again at 60 °C for about six hours until completely dry and subsequently stored in airtight containers.

Data Collection and Value-Added Analysis

Data were collected through two complementary approaches. For economic analysis, data included local market prices for raw materials and products, estimated labor input based on the training session duration, and input costs for supporting materials such as rice and packaging, verified through participant discussion and local market comparison. For non-economic outcomes, data were gathered through direct observation of participant engagement including attendance, active discussion, and willingness to practice, supplemented by field notes and a facilitated group reflection at the end of each session. Qualitative observation and descriptive analysis were applied to interpret participant responses and implementation outcomes (Miles et al., 2014).

Economic evaluation was conducted using the Hayami value-added method (Hayami et al., 1987; Hasiani, 2024) to determine production value, value added, and margin distribution. The analysis considered variables such as raw material input, labor, production output, and product price.

Production value was calculated based on the conversion factor multiplied by product price, while value added was determined by subtracting raw material and input costs from production value. The results were used to assess the economic feasibility of kokang leaf processing as a household-based economic activity.

Results and Discussion

Implementation of the Community Service Activity and Participant Response

The community service activity was implemented through a participatory approach involving members of Dasawisma Teratai Indah and Dasawisma Mawar in Kota Bangun I Village. Integration of the program into routine Dasawisma meetings created a familiar and inclusive

environment that supported sustained participation. Attendance across both groups was consistent throughout the program, and field observations recorded active involvement in group discussions, hands-on practice, and end-of-session reflections. Participants demonstrated willingness to ask questions and replicate each processing step, indicating substantive engagement rather than passive attendance.

Initial discussions revealed that *pupur dingin* had long been recognized as a traditional cosmetic product, primarily used for personal and household purposes. However, prior to this activity, it had not been perceived as a potential income-generating product. Through hands-on training and guided practice, participants gradually developed a broader understanding of the economic potential of kokang leaves. In the group reflection session, several participants expressed that they had not previously considered selling pupur dingin and showed interest in exploring simple packaging options, indicating a meaningful shift in perception from subsistence to potential economic use.

This shift in perception highlights the importance of participatory approaches in community empowerment. Active engagement allows participants to reinterpret traditional knowledge within an economic context, thereby strengthening their motivation to adopt productive activities. Similar findings have been reported in community-based agro-processing initiatives, where participatory learning enhances both awareness and adoption of new practices (Widiastuti et al., 2020; Lestari et al., 2019).

Table 1. Materials and Equipment Used in Kokang Leaf Pupur Dingin Production

Category	Item	Specification/Quantity	Function
Materials	Fresh kokang leaves	1 kg	Main raw material
	Rice	2 kg	Base material
	Clean water	As required	Washing and soaking
Equipment	Mortar and pestle	Household scale	Grinding
	Drying oven	40–60 °C	Moisture reduction
	Fine sieve	Household scale	Powder uniformity
	Containers	Plastic	Storage

Source: Primary data (2025)

Household-Scale Production Feasibility

The production of kokang leaf pupur dingin was successfully carried out using simple materials and equipment that are readily available at the household level. This condition is essential to ensure that the activity can be independently replicated by Dasawisma members without requiring significant capital investment. The use of rice as a base material contributes to improving product texture and shaping, while the drying process plays a critical role in reducing moisture content and enhancing product stability. The application of a drying oven at moderate temperatures (around 60 °C) was used to support more controlled moisture reduction, promoting greater processing consistency for the purposes of this activity.

The simplicity of the production process demonstrates that small-scale processing can be implemented effectively using appropriate technology. This finding supports previous studies indicating that simple technological interventions can significantly improve product quality and market potential in household-based agro-processing systems (Suryani et al., 2021; Nurhasanah et al., 2020; Kusuma & Santoso, 2022).

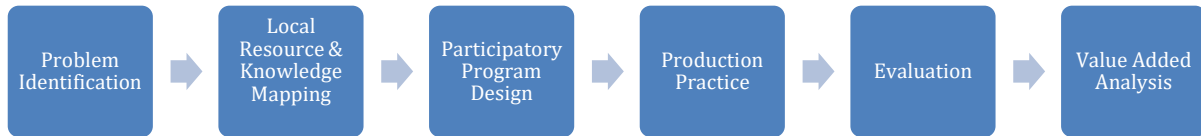


Figure 1. Participatory activity flow in kokang leaf *pupur dingin* processing

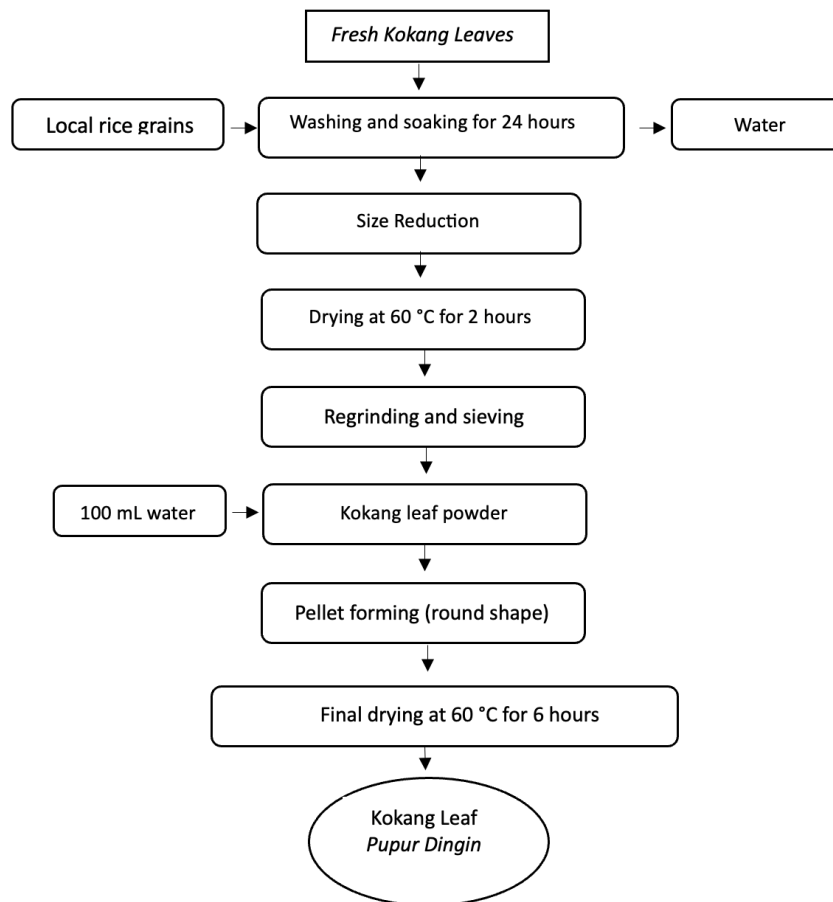


Figure 2. Processing flow of kokang leaf *pupur dingin* production at household scale

Participatory Process and Technical Implementation

The participatory framework applied in this activity ensured that all stages from problem identification to production and evaluation were conducted collaboratively. This finding is consistent with previous studies indicating that participatory learning in community settings enhances both awareness and adoption of new practices. The activity flow (Figure 1) illustrates the integration of participatory discussions, practical training, and evaluation. This structured process enabled participants to understand not only the technical aspects of production but also the rationale behind each step.

Meanwhile, the processing flow (Figure 2) demonstrates that kokang leaf *pupur dingin* production involves a sequence of simple yet critical steps, including washing, soaking,

grinding, drying, sieving, shaping, and final drying. Each step contributes to product quality, particularly in terms of texture, stability, and ease of application.

The ability of participants to follow and replicate these steps indicates that the technology introduced in this activity is appropriate for household-scale implementation and can be sustained beyond the program period (Suryani et al., 2021).



(a) Participatory training and discussion



(b) Drying process using oven



(c) Final kokang leaf *pupur dingin* product

Figure 3. Training and production activities of kokang leaf pupur dingin using a participatory approach

Value-Added Analysis of Kokang Leaf Processing

Based on the Hayami value-added analysis, the processing of kokang leaves into pupur dingin generated a positive value added of IDR 9,500 per kg of raw material, with a value-added ratio of 47.50%. This indicates that the processing activity was capable of increasing the economic value of kokang leaves through household-scale processing. The production value obtained was IDR 20,000 per kg, calculated from the conversion factor and product selling price.

The positive value added demonstrates that the utilization of local resources through simple processing activities can provide additional economic benefits to the community. The contribution of other inputs, particularly rice used as a supporting material, accounted for a relatively large proportion of production costs, amounting to 51.28% of the total margin. Nevertheless, the business activity still generated a positive profit of IDR 4,500 per kg, indicating that the processing activity remained economically feasible at the household scale. Labor income accounted for 25.64% of the total margin, reflecting the involvement of household labor in the production process. The relatively simple processing technique and the use of locally available materials support the applicability of this activity as a community-based economic initiative. These findings suggest that kokang leaf processing into pupur dingin has the potential to be further developed through improvements in production consistency, packaging, and product marketing to enhance its economic value and sustainability.

Table 2. Value-Added Analysis of Kokang Leaf *Pupur Dingin* Using the Hayami Method

No	Variable	Notation	Calculation	Value
1	Output of <i>pupur dingin</i> (kg)	A	–	0.5
2	Raw material (kokang leaves, kg)	B	–	1.0
3	Labor input (HOK)	C	–	0.10
4	Conversion factor	D	A / B	0.5
5	Labor coefficient (HOK/kg)	E	C / B	0.10
6	Product price (Rp/kg product)	F	–	40,000
7	Labor wage (Rp/HOK)	G	–	50,000

8	Raw material cost (Rp/kg)	H	–	500
9	Other input costs* (Rp/kg)	I	–	10,000
10	Production value (Rp/kg)	J	$D \times F$	20,000
11	Value added (Rp/kg)	K	$J - I - H$	9,500
12	Value-added ratio (%)	L	$K / J \times 100$	47.50
13	Labor income (Rp/kg)	M	$E \times G$	5,000
14	Business profit (Rp/kg)	N	$K - M$	4,500
15	Margin (Rp/kg)	O	$J - H$	19,500
16	Share of labor (%)	P	$M / O \times 100$	25.64
17	Share of other inputs (%)	Q	$I / O \times 100$	51.28
18	Share of profit (%)	R	$N / O \times 100$	23.08

*Other inputs include rice as the base material and packaging. Source: Primary data (2025).

Implications for Community-Based Economic Development

Beyond economic indicators, the activity contributes to strengthening community capacity and optimizing the use of local resources. The transformation of kokang leaves from a subsistence-based material into a value-added product reflects a shift toward more productive utilization of local biodiversity.

The involvement of Dasawisma groups further enhances the sustainability of the activity, as these groups already possess established social structures that support collective learning and cooperation. This condition provides a strong foundation for developing small-scale economic initiatives based on local resources.

Overall, the results indicate that kokang leaf processing into *pupur dingin* has potential to be developed further as a community-based economic activity, particularly when supported by improvements in production consistency and simple product packaging. This finding aligns with previous studies showing that community-based processing activities can enhance local economic resilience and optimize resource utilization (Widiastuti et al., 2020; Sari & Nugroho, 2020). This indicates that local resource-based processing not only improves income but also contributes to sustainable rural development. Community-based processing activities are also reported to contribute to strengthening local economic resilience and sustainable rural development (Sari & Nugroho, 2020).

Conclusion and Recommendation

This community service activity demonstrates two main findings. First, processing kokang leaves into *pupur dingin* is technically replicable at the household scale using simple and locally available equipment, as demonstrated by participants' ability to complete all production steps during guided training. Second, the value-added analysis confirms a positive but modest economic return of IDR 9,500 per kg of raw material, with a value-added ratio of 47.50%, indicating economic viability at the household level. The participatory approach also facilitated a meaningful shift in participants' perception of *pupur dingin*, from a traditional subsistence product to one with potential local economic value. It should be acknowledged, however, that the long-term income potential of this activity depends on factors not examined in this study, including production continuity, market demand, and practical labor arrangements.

Based on these results, it is recommended that *pupur dingin* production be continued as a routine Dasawisma activity, either individually or through simple collective arrangements.

Further support should focus on improving processing consistency and developing simple packaging to enhance product acceptance at the local level. Future assessments should also examine market demand, sales continuity, and long-term participation to more comprehensively evaluate the economic impact of the activity, while maintaining its traditional characteristics.

References

- Cornwall, A. (2021). Power, participation and inequality: Perspectives on participatory approaches in development. *World Development*, 145, 105540. <https://doi.org/10.1016/j.worlddev.2021.105540>
- Fajriyati, S. A. N., Arifuddin, M., & Kuncoro, H. (2021). Antioxidant activity of kokang leaves (*Lepisanthes amoena*) using DPPH method. *Proceedings of Mulawarman Pharmaceuticals Conferences*, 13(1), 182–187. <https://doi.org/10.25026/mpc.v13i1.464>
- Hasiani, Y. (2024). Value-added analysis of household-scale agricultural product processing using the Hayami method. *Rawasains*, 3(1), 45–52.
- Hayami, Y., Kawagoe, T., Morooka, Y., & Siregar, M. (1987). *Agricultural marketing and processing in upland Java: A perspective from a Sunda village*. Bogor: CGPRT Centre.
- Kusuma, H., & Santoso, B. (2022). Utilization of local resources in small-scale agroindustry for sustainable rural development. *Indonesian Journal of Agricultural Economics*, 14(1), 45–56.
- Lestari, E., Prabowo, R., & Sari, D. (2019). Participatory approaches in community-based agroindustry development. *Journal of Community Empowerment*, 5(2), 101–110.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage.
- Nurhasanah, S., Widodo, S., & Hartono, B. (2020). Value-added analysis of household-scale agro-industrial products. *Agriekonomika*, 9(1), 33–42. <https://doi.org/10.21107/agriekonomika.v9i1.6984>
- Rahman, M., Islam, M., & Rahman, M. (2022). Herbal cosmetics: Applications of plant extracts in skin care products. *Journal of Cosmetic Dermatology*, 21(9), 4104–4112. <https://doi.org/10.1111/jocd.14834>
- Sari, D., & Nugroho, A. (2020). Development of rural-based agroindustry to support local economic resilience. *Jurnal Ekonomi Pembangunan*, 18(2), 115–126.
- Slamet, M. (2012). Pemberdayaan masyarakat: Konsep, kebijakan, dan implementasi. *Jurnal Penyuluhan*, 8(2), 65–74. <https://doi.org/10.25015/penyuluhan.v8i2.993>

- Suryani, A., Wulandari, R., & Hidayat, T. (2021). Development of traditional cosmetic products through community-based processing. *Jurnal Pengabdian kepada Masyarakat*, 6(3), 211–219.
- Utoro, P. A. R., Alvianto, D., Romadhon, T., Musdalifah, N., Purba, N. S., Rahayu, L. F., & Khoirina, A. D. (2025). Bioactive compounds and potential health benefits of kokang leaves (*Lepisanthes amoena*). *Agricultural Technology Sphere and Engineering Journal*, 1(1), 10–19.
- Widiastuti, R., Handayani, S., & Purnomo, A. (2020). Women empowerment through household-based agro-processing activities. *Jurnal Pemberdayaan Masyarakat*, 4(1), 55–66.
- Yuliani, R., & Prasetyo, B. (2021). Household-scale processing and value-added development in rural agroindustry. *Journal of Agribusiness Development*, 3(2), 89–98.