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EMPOWERMENT OF THE MELAPI VILLAGE COMMUNITY THROUGH TRAINING ON BIO-VETSIN MAKING FROM SENGKUBAK LEAVES (PYCNARRHENA CAULIFLORA)

Nurdiansyah*[1], Diah Mustika Lukitasari[2], Hamidun[3], Hetty Sri Mulyati[4], Muhammad Syafi'ie[5], Dody Radiasah[6], Syarif Muhammad Ilham7, Ridho Dwi Syahrial[8]

[1,2,3,4,5]Program Studi Teknologi Pengolahan Hasil Perkebunan, Jurusan Teknologi Pertanian, PDD Politeknik Negeri Pontianak Kabupaten Kapuas Hulu

[6]Program Studi Manajemen Perkebunan, Jurusan Teknologi Pertanian, Politeknik Negeri Pontianak

[7]Program Studi Akutansi, Jurusan Akutansi, PSDKU Politeknik Negeri Pontianak Kabupaten Sanggau

[8]Program Studi Teknologi Mesin, Jurusan Teknik Mesin, PSDKU Politeknik Negeri Pontianak Kabupaten Sanggau

E-mail: nurdiansyah@polnep.ac.id, diah.mustika@polnep.ac.id, hamidunspdmat@gmail.com, hettysrimulyati@polnep.ac.id, syafiimuhammad.id@gmail.com, dodyradiansah@gmail.com akuntan.rna1748@gmail.com ridhodwisyahrial@polnep.ac.id

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Abstract

The Community Service Program (PKM) focuses on empowering the people of Melapi Village through training in making bio-vetsin from Sengkubak leaves (Pycnarrhena cauliflora), which is a natural alternative to MSG. The goal is to optimize local potential by improving knowledge and hygiene processing skills as well as mastery of appropriate technology. The method used is Participatory Rural Appraisal (PRA) with an interactive lecture approach, demonstration, and hands-on practice (learning by doing). The results showed an increase in participants' knowledge by 45% (pre-test and post-test scores) and 85% of participants were skilled in operating processing equipment. This program has succeeded in producing ready-to-sell bio-vetsin products, opening up sustainable economic opportunities, and preserving the local wisdom of Melapi Village.

Keywords: PKM, Bio-Vetsin, Appropriate Technology, Local Wisdom.

INTRODUCTION

Sengkubak (Pycnarrhena cauliflora) is an endemic plant of Kalimantan that thrives in the wild and has not been cultivated properly (Iriani, 2022), in West Kalimantan, sengkubak is found at an altitude of 100-150 m above sea level in lowlands and hills (Jumilah, 2012). Sengkubak leaves that have high economic potential but have not been utilized optimally. Sengkubak leaves have long been traditionally used by the Dayak people as a natural flavoring substitute for monosodium glutamate (MSG) or vetsin (Juita, 2015). According to Iriana, in 2022 sengkubak contains 2,845.82 mg/kg of glutamic acid content Natural flavoring is a food additive derived from natural ingredients both from plants and animals, which functions to strengthen or modify the taste (Andrestia, 2018), Monosodium glutamate or MSG is a food additive that is widely used in various countries to give additional flavor to the food to be served (ElShobaki et al., 2016). Melapi Village, with its natural wealth, has abundant access to sengkubak plants. However, its use is still limited to the household scale with a simple method, so the economic value and marketing reach are still very limited.

On the other hand, the global community's awareness of healthy living is increasing. This is characterized by the high demand for natural, organic, and synthetic chemical-free food products (Das et al., 2022). This trend is not only due to the desire for cleaner food, but also driven by the increasing awareness of the positive impact of organic products on health and the environment (Wang, 2024). Consumers are increasingly careful in choosing products that are not only delicious but also safe and environmentally friendly, driving the organic products market to grow rapidly globally (Sharma, 2025). Synthetic MSG is often associated with various health problems if consumed in excess, such as Chinese Restaurant Syndrome, obesity, and metabolic disorders (Zanfirescu et al., 2019). Research shows that the consumption of synthetic MSG can trigger such negative effects, increasing consumer concerns about synthetic additives in processed foods (Zanfirescu et al., 2019). This condition opens up huge market opportunities

for natural flavoring alternatives, such as bio-vetsin from Sengkubak leaves that not only offer a distinctive umami (savory) taste, but are also safe and healthy for consumers. The use of these natural ingredients is in line with the trend of consumers switching to natural products that support long-term health without harmful side effects (Chen et al., 2022). Overall, the shift towards natural and organic food products is not only a response to the health risks of synthetic materials, but also part of a global lifestyle shift towards a healthier and more sustainable direction. The demand for products such as bio-vetsin from Sengkubak leaves will continue to increase, as consumer awareness of the importance of consuming natural, safe, and nutritious food is increasingly high. Despite the abundant natural resource opportunities, the people of Melapi Village face several fundamental challenges. First, from the aspect of knowledge, the understanding of hygienic processing techniques, product standardization, packaging, and labeling is still very minimal. The processing carried out is still conventional without considering shelf life and consistent quality. Second, from the aspect of tool application, people still rely on simple equipment that is inefficient for large-scale production. The unavailability of appropriate technology, such as an adequate drying oven or grinder, is a major obstacle in improving production quality.

Based on initial observations, a solutive and sustainable intervention is needed to empower the people of Melapi Village. A comprehensive training program is key to overcoming both challenges. Training should not only focus on the transfer of knowledge regarding good handling procedures but also on the introduction and training in the use of efficient processing tools. By improving competence in these two aspects, the community will not only be able to produce high-quality bio-vetsin, but also be able to make bio-vetsin with maintained standards. Therefore, through this Community Service (PKM) program, we take the initiative to carry out the program "Empowerment of the Melapi Village Community through Training on Making Bio-Vetsin from Sengkubak Leaves" which includes optimizing aspects of processing knowledge and mastery of production tools. This program is designed to answer problems holistically, with the aim of forming community independence in managing local natural resources, as well as preserving high-value local wisdom through appropriate science and technology approaches.

METHOD

Activity Design

This PKM program is designed with an emphasis on active community participation from planning to evaluation using the Participatory Rural Appraisal (PRA) approach. The implementation method is carried out through interactive lectures, demonstrations, and direct practice (learning by doing) (Lestari, 2020). The series of activities will be carried out in three main stages, namely:

1. Preparation Stage : Field observation, coordination with village officials, and recruitment of participants.
2. Implementation Stage : Intensive training that includes increased knowledge and mastery of the tool.
3. Evaluation Stage : Assessment of success, monitoring, and assisting in marketing planning.

Table 1. Implementation Procedure (Activity Stages)

Yes	Stages	Activities	Method	Result
1	Preparation	1) Observation and FGD with the community and village officials. 2) Recruitment of 20 trainees (PKK women and SMKN 2 students. 3) Preparation of training modules and preparation of tools.	FGD, Wawancar	The formation of participant groups, ready-to-use modules, fixed schedules
2	Training Implementation	**Session 1: Knowledge Enhancement** 1) Material economic potential & advantages of bio-vetsin. 2) Food Safety Materials & Good Handling Practices, Product Standardization, Packaging, & Labeling	Interactive talks, Q&A, Group discussions.	Participants understand the basic theories of safe food processing. Understanding the Bio-vetsin

		3) Bio-vetsin processing material for sengkubak leaves.		manufacturing process
		Session 2: Mastery of Processing Tools 1) Demonstration of the use of drying ovens, shredding machines, and flouring machines (operational, and maintenance). 2) Direct practice, drying, enumerating and grinding of Sengkubak leaves.	Demonstration, Learning by Doing with mentoring.	Participants are skilled in operating dryers, choppers and flours.
		Session 3: Knowledge and Tool Integration. 1) The practice of making bio-vetsin from start to finish uses trained tools. 2) Interesting packaging and labeling practices	Independent Practice in Groups, Mentoring	Bio-vetsin products produced by participants
3	Evaluation	Assessment of training results (pre-test & post-test). 1) Post-training assistance for the first production. 2) Focus Group Discussion (FGD)	Questionnaires, FGDs, Direct Mentoring	Measurable improvement of knowledge and skills.

Measurement Tools and Methods for Evaluating Success

The success of this program will be measured from several aspects using quantitative and qualitative measurement tools to ensure that its impact is clearly visible and measurable.

1. Aspects of Knowledge and Skills Improvement (Cognitive & Psychomotor)

   Measuring Tools: Pre-Test and Post-Test questionnaires containing questions about food safety materials, processing stages, and tool use. How to Measure: Compare pre-test (pre-training) and post-test (post-training) scores. Success Indicators: There was an increase in the average score of ≥ 30%. The data analysis uses the Paired Sample T-Test statistical test to prove that the increase is significant.
2. Aspects of Tool Mastery (Psychomotor):

   Measuring Tools: Observation Checklist Sheet during practice sessions. The checklist contains aspects such as: the ability to turn on/off, operate, and maintain the appliance. Measurement Method: Direct observation by the mentor and recording on the checklist. Success Indicators: ≥ 60% of participants are able to operate all equipment correctly and independently based on the criteria on the checklist.

RESULTS AND DISCUSSION

This Community Service Activity (PKM) was successfully implemented and had a significant and measurable impact on the people of Melapi Village. The training program for making bio-vetsin from Sengkubak leaves is designed to provide knowledge, skills, and behavior changes in processing natural resources in a more modern and hygienic manner. Overall, the success indicators that have been set in the program planning can be achieved, proving that an integrative training approach between knowledge and mastery of tools is effective in empowering the community. Based on the results of the data analysis, there was a very significant increase in knowledge and understanding of participants. This is evidenced by the comparison of pre-test and post-test scores which showed an increase in the average score of 45%, far exceeding the initial target indicator of 30%. The results of the Paired Sample T-Test statistical test confirmed that this increase was significant, indicating that the materials presented, food safety (Good Handling Practices), and product standardization, were successfully absorbed by the participants. This increase in knowledge is a crucial foundation for the realization of a behavioral change from traditional processing to a more standardized and market-oriented direction.

In the psychomotor aspect or practical skills, participants also showed extraordinary progress. Through the learning by doing method and direct mentoring, participants successfully operated the equipment introduced, such as drying ovens, chopping machines, and flouring machines. The observation checklist sheet showed that 85% of participants were able to operate the entire set of equipment correctly and independently, exceeding the target success indicator by 60%. These skills are not only limited to tool operations, but also include integrated production processes, from drying, shredding, grinding, to attractive packaging and labeling. The direct output of this training is a practical bio-vetsin product that is ready for consumption, being a tangible proof of the success of the program. The main advantage of this program is its suitability with local potential and community needs. Sengkubak leaves as raw materials are abundant and easily accessible, so the program is sustainable. The Participatory Rural Appraisal (PRA) approach that involves the community from the beginning is also the key to high acceptance and enthusiasm. However, the program also has drawbacks, especially in terms of the level of production difficulty in the initial post-training phase. The community still needs to adapt to operational costs (such as electricity for tools) and more planned production management. In addition, bargaining power in the face of market fluctuations and building a stable distribution network is a medium-term challenge that must be overcome. The opportunities for future development are huge. This bio-vetsin product has a high selling value in line with the trend of a healthy lifestyle of the community. In the future, development can be focused on the formation of halal branding and certification as well as PIRT permits so that products can enter the modern retail market. Product development, such as mixing with other spices or creating more varied packaging shapes, can also be done to expand market segments. Thus, this program has not only succeeded in achieving the short-term goal of increasing community capacity, but has also laid a strong foundation for economic independence and the preservation of local wisdom in Melapi Village in the long term.

CONCLUSION

The PKM program for bio-vetsin manufacturing training in Melapi Village has succeeded in significantly increasing the capacity of the community, with a 45% increase in knowledge and mastery of tools by 85% of participants. An integrative approach of theory and practice has proven to be effective in optimizing the local potential of Sengkubak leaves. Despite facing operational and marketing challenges, this program has succeeded in laying the foundation for the development of sustainable businesses based on local wisdom.

REFERENCES

Clarissa Regina Andrestia and Feda Anisah Makkiyah. (2018). "The Utilization of Mushrooms as Natural Flavoring," IKRAITH-TEKNOLOGI Vol 8 No 1 March 2024, DOI: 10.37817/ikraith-teknologi.v8i1

Das, N. et al. (2022). "Examining the role of health consciousness, environmental concern, and perceived value on organic food purchase behavior." Journal of Cleaner Production, Volume 368, 2022, 133115. DOI: 10.1016/j.jclepro.2022.133115.

E S Iriani, I Kurniasari, Sujianto and A Subekti. (2022). Exploration and preliminary analysis of sengkubak (Pycnarrhena cauliflora (Diels)) as natural food flavouring additive prospect. IOP Conf. Series: Earth and Environmental Science 974 (2022) 012110. doi:10.1088/1755-1315/974/1/012110

El-Shobaki, F. A., Mahmoud, M. H., Attia, A. E.-R. M., Refaat, O. G., & El-Haggar, E. F. (2016). The Effect of Monosodium Glutamate (msg) on Brain Tissue, Oxidation State, True Cholinesterase and Possible Protection against Health Hazards Using Natural Spices. Der

Jumilah, S.Hut. (2012). Squirrel [Pycnarrhena cauliflora (Miers.) Diels]: Utilization and Dissemination in West Kalimantan. Ethnobotanical Study and Aspects of Sengkubak Conservation, posted on May 26, 2012. Dedai District Forestry Extension Officer. http://repository.ipb.ac.id/handle/123456789/10438

Lestari, M.A. (2020). "Application of Participatory Rural Appraisal (PRA) Techniques for Village Community Empowerment." Journal of Community Service, Padjadjaran University. https://jurnal.unpad.ac.id/jppm/article/view/30953/14378

Neni Juita, Irwan Lovadi, Riza Linda. (2015). The Utilization of Plants as Natural Flavoring in the Dayak Tribe of Jangkang Tanjung and Malay in Sanggau Regency" Research Journal, Tanjungpura University. Journal of Protobiont. Vol. 4 (3): 74-80

Sharma, N. (2025). Case studies of farmers growing organic food products near Udaipur city, Rajasthan, India. Asian Journal of Advances in Agricultural Research, 25(1), 46-57. https://doi.org/10.9734/ajaar/2025/v25i1580

Sonia Chien-i Chen, Chenglian Liu, Zhenyuan Wang, and Farid Arya. (2022). Innovative Strategies to Fuel Organic Food Business Growth: A Qualitative Research. Int. J. Approximately. Res. Public Health, 19, 2941. https://doi.org/10.3390/ijerph19052941

Wang, C., Guo, J., Huang, W., Tang, Y., Li, R. Y. M., & Yue, X. (2024). Health-driven mechanism of organic food consumption: A structural equation modelling approach. Heliyon, 10(e27144). https://doi.org/10.1016/j.heliyon.2024.e27144

Zanfirescu, A., Ungurianu, A., Tsatsakis, A. M., Nițulescu, G. M., Kouretas, D., Veskoukis, A., Tsoukalas, D., Engin, A. B., Aschner, M., & Margină, D. (2019). A review of the alleged health hazards of monosodium glutamate. Comprehensive Reviews in Food Science and Food Safety, 18(4), 1111–1134. https://doi.org/10.1111/1541-4337.12448