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Training and Guidance for Business Unit Groups, Village-Owned Enterprises of Makmur Jaya Gwinjaya, East Bonggo District, Sarmi Regency, Papua Province in Making Sago Soy Sauce

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ABSTRACT

Training and Guidance for the business unit, a village-owned enterprise of Mekar Jaya, Gwinjaya Village, East Bonggo District, Sarmi Regency, Papua Province, in Making Sago Soy Sauce aims to provide skills in making soy sauce with additional nutrition derived from sago flour. Sago flour, in addition to being a nutritional supplement, is also a natural thickener added to sago soy sauce. The activity was carried out by socializing the importance of partnering with academics in producing products and their marketing. In addition, together with the participants, they made sago soy sauce based on the procedures that have been explained, after the sago soy sauce was successfully made, the quality and level of preference were tested with an organoleptic test compared to soy sauce on the market with a Likert scale (very much like, very much like, like, somewhat like, less like, and dislike) with parameters (taste, smell, texture, aroma and color). Additional material in the form of marketing aspects began with determining the cost price, and marketing strategies. After participating in the training and guidance, participants were able to make sago soy sauce and were able to determine the cost price. The results of the organaleptic test showed that on average the respondents showed a level of liking for the taste, smell, texture, aroma and color of the sago soy sauce product they produced.

Keywords: Soy sauce, sago soy sauce, natural thickener

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INTRODUCTION

Gwinjaya Village where Bumdes Makmur Jaya is located, is part of Papua province which has sago land of +/1.2 million ha2 and has the potential to be developed into various food industries in order to increase food security based on local natural resources. The product offered was sago soy sauce which received a

simple patent IDS.00008531 dated July 22, 2024. The process of making sago soy sauce in large quantities in a short timeframe necessitates various modifications of sago flour-based foods. One such modification is the use of sago biscuits. There are no soy sauce producers in Papua Province and the need for soy sauce is imported from outside the island of Papua. Therefore this product can fulfill the need for soy sago glucose syrup members of BUMDES business units to make sago soy sauce, and the presence of new commodities in their business units can increase the income of its members and the community whose natural resources are used to make sago soy sauce so that it can reduce poverty and the inability to buy food. Soy sauce is a traditional seasoning that has become part of Asian culture. Soy sauce is generally blackish brown sauce (Wan et al. 2013). Soy sauce is made from soybeans fermented by *Rhizopus stolonifer*. (Ningrumsari et al. 2020) or *Aspergillus orizae*(Ji et al. 2024) . After the fermentation period, the soybean extract beca me soy sauce seeds. The soy sauce seeds were mixed with coconut water, various spices and palm sugar, boiled, boiled, and sago flour solution was added until it thickened as desired until sago soy sauce was formed. (Tri Gunaedi and Euniche RPF Ramandey 2024). Various names for Soy sauce in the Philippines is called toyu, in Japan sho-yu in Indonesia Ketjap and in China Tou-yu, which is the result of enzymatic hydrolysis that changes soybean protein into various amino acids which improves the flavor of soy sauce.(Zahidah and Lo 2022). Adding young coconut water increases its nutritional value because it contains growth hormones and minerals. (Pattiiha, Novelia, and Suciawati 2021). Sago flour also has antioxidant effects which are important for improving body health. (Duque, Castro, and Flores 2018). Sago flour also has antioxidant effects which are important for body health (Tri Gunaedi and Rahayu 2022). Large quantities in a short timeframe necessitate various modifications to sago flour-based foods. One such modification is the use of sago biscuits. (Tri Gunaedi and Zebua 2023), sago glucose syrup (T Gunaedi et al. 2016) and sago bioplastics.(Tri Gunaedi, Mawardi, and Rumbrawer 2021) The use of coconut water in making sago soy sauce is not only healthy but also refreshing because it contains many minerals that the body needs. (Lopez and Shalet Lopez 2023) When making coconut water soy sauce was 160 min. (Fatima et al. 2024) so it does not take long to make it. Various variations of additional ingredients in soy sauce include sorghum to increase the protein content. (Munir et al. 2024),. Fermenting soybeans with a salt solution above 40% accelerates the breakdown of proteins into amino acids and inhibits bacterial growth (Zheng et al. 2024). In addition, soy sauce can be made using tempeh which is sliced thinly and dried in the sun, and then fermented with a salt solution for three four days (Zahidah and Lo 2022). The fungi used in soy sauce production vary, with the usual ones being Zygosachromyces rouxii and Tetragenococcus halophylus, which are used for soy sauce, koji, and brine fermentation (Devanthi and Gkatzionis 2019). In soy sauce, 82 types of volatile compounds have been identified and combined to enhance its taste, aroma and flavor of the soy sauce.(Devanthi and Gkatzionis 2019). Soy sauce is generally dark brown and tastes salty, but there are also sweet ones depending on the desired taste when making it. If you want it sweet, the sugar concentration is higher if it is salty, the salt concentration is higher.

METHOD

Ten members of the Mekar Jaya Village-Owned Enterprise (BUMDes) business unit in Gwinjaya Village participated in the training and guidance on making sago soy sauce. The community service implementation method includes outreach, training, technology implementation, cost pricing, marketing strategies, production quality evaluation, and program sustainability. The overview of technology and innovation can be explained in two stages. The first stage is the production of asoy sauce starter from fermented tempeh with a 40% salt solution. The following steps were followed: 1 kg of tempeh was cut into 2 cm2 pieces.Dry it in the sun until dry. Once dry, it in a 5-liter glass container containing a 40% salt solution. Incubate for 30 days. After incubation, the mixture was blended and strained to form a soy sauce starter. In the second stage, the production of Sago Soy Sauce begins by roasting ground spices, including petai and sesame seeds. Kluwak and candlenuts, garlic, and brown sugar were ground in a separate container. lemongrass and galangal are flattened (soy sauce seasoning) soy sauce seeds are mixed with 6 liters of coconut water and brought to a boil, add the soy sauce seasoning while stirring on a medium heat stove while stirring until it turns blackish brown with the smell of soy sauce, add the sago solution until the soy sauce thickens, after it cools, the sago soy sauce is filtered and put into the soy sauce filler, the sago soy sauce is packaged in a 135 ml plastic soy sauce bottle. The components used were as follows: 6 liters of coconut water, 1 kg of brown sugar, 5 of salt, 1 kg of tempeh, 750 g of keluwak, 200 g of galangal, 250 g of garlic, 5 stalks of lemongrass, 2 bay leaves, 0.05% sodium benzoate, 30 g of star anise, 175 g of candlenut, 100 g of sesame, and 100 g of sago flour. The successful production of sago soy sauce was tested for its level of liking using an organoleptic test and compared to soy sauce available on the market. The organoleptic test used a Likert scale with the categories really like (6), similar to (5), like (4), somewhat like (3), less like (2), and dislike (1) the parameters assessed were taste, smell, texture, aroma, and color

RESULTS AND DISCUSSION

Training and guidance on sago soy sauce production and marketing for members of the Mekar Jaya village-owned enterprise unit have resulted in the successful production of sago soy sauce. Eight liters of sago soy sauce was produced from a mixture of 10 liters of ingredients. After being packaged in 135 mL soy sauce bottles, 60 bottles of sago soy sauce were produced. The cost per unit of product is obtained from the total production cost/number of products produced, namely Rp. 533,550/60 bottles of sago soy sauce = Rp. 8,892.50 or Rp. 9,000/bottle, a price competitive with other soy sauces in the market.

Figure 1. Sago soy sauce, the result of training on making sago soy sauce from a business unit
owned by the Mekar Jaya village business entity, Gwinjaya Village.

The reduction in the amount of sago soy sauce from 10 liters to 8 liters was due to evaporation during the 1-2 hour heating process. Heating kills tempeh mold spores and other microorganisms that may have been introduced by the added ingredients and spices. The evaporation process also increases the viscosity of the soy sauce, along with the addition of sago starch solution as a thickener and source of carbohydrates in the form of flour. The results of the organoleptic test on the sago soy sauce product compared to soy sauce sold on the market show the respondents' level of preference for the sago soy sauce product, as shownin Figure 2.

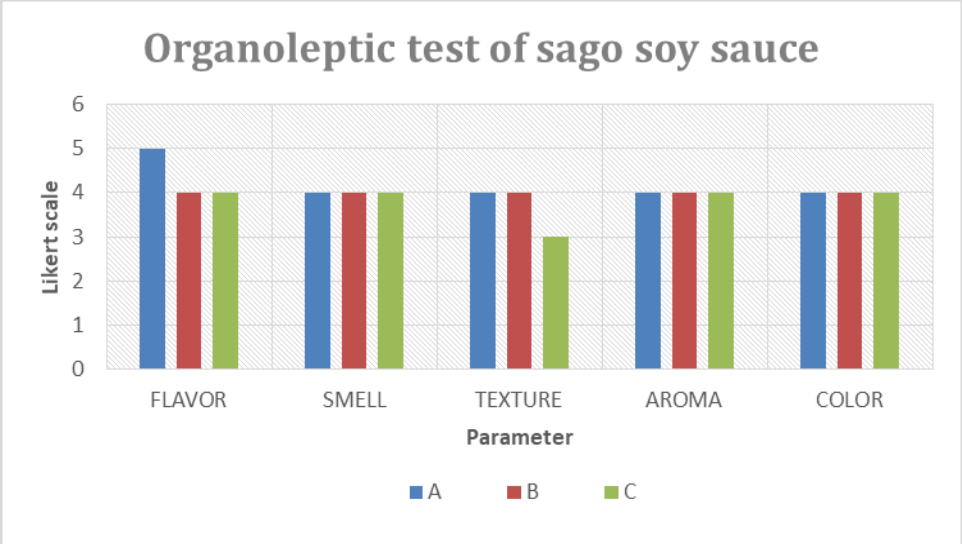

Figure 2. Organoleptic test of sago soy sauce produced by the business unit of the Mekar Jaya village-owned business entity, Gwinjaya compared to soy sauce on the market. Description A (Soy sauce on the market), B (Sago soy sauce with 40% w/v palm sugar, and C (Sago soy sauce with 60% w/v palm sugar).

In general, soy sauce is used for food preparation and is not consumed. Therefore, soy sauce contains food ingredients. Dishes that use soy sauce will taste delicious if other species are also measured correctly. In soy sauce variant A, respondents really liked it in terms of taste because soy sauce A is not given additional nutritional sago flour solution, in contrast to variants B and C, which are variants of sago soy sauce. Judging from the texture, it is less liked because of the addition of 1.25% w/v sago flour, while soy sauce B is added with as much as 0.5% w/v sago flour, so there seems to be a difference in the level of viscosity. The addition of sago flour aims to increase nutritional value, because in 100 grams of sago flour contains 209 kcal, 0.3 protein, 51.6 g of carbohydrates, 0.2 g of fat, vitamin A 0 IU, vitamin B10.01 milligrams (Makmur 2017). The addition of sago flour to sago soy sauce is quite different from the addition of other soy sauce variants in the market. Intensive product introduction to the public will increase interest in sago soy sauce.

CONCLUSION

The sago soy sauce production activity of the members of the business unit, a village-owned enterprise in Mekar Jaya, Gwinjaya Village, successfully produced sago soy sauce. The resulting sago soy sauce was well-liked by the community. The price per 135 ml bottle of soy sauce was calculated and agreed upon as Rp 9,000 per bottle. It is necessary to introduce sago soy sauce to other communities to increase its popularity.

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Conflict of Interest declaration

The authors declare that they have no affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript

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