

BREAD-MAKING PROCESS FROM BANANA FLOUR AND MODIFIED CASSAVA FLOUR IN SILO VILLAGE, JEMBER

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Abstrak

Singkong dan pisang adalah komoditas pertanian yang paling banyak ditanam di Desa Silo. Petani menanam kedua komoditas tersebut untuk memenuhi kebutuhan lokal. Agar dapat memberikan nilai tambah pada kedua komoditas tersebut, tim pengabdian masyarakat berupaya untuk membuat roti rendah gluten dengan memanfaatkan tepung asal singkong termodifikasi (mocaf) dan tepung pisang. Oleh karena itu, program pengabdian masyarakat ini dilaksanakan untuk memperkenalkan roti yang terbuat dari mocaf dan tepung pisang sebagai alternatif pengganti tepung terigu, serta meningkatkan keterampilan dan pengetahuan masyarakat di Desa Silo. Metode yang digunakan dalam program pengabdian masyarakat ini adalah pendekatan peserta dan pengamatan lapang, program pelatihan, dan pendampingan peserta. Program pemantauan diadakan selama pendampingan peserta untuk mengecek kemajuan yang ditetapkan dalam tujuan pengembangan. Modul juga disediakan oleh tim pengabdian masyarakat. Anggota PKK di Desa Silo tertarik dengan program ini karena inovasi yang diberikan. Roti rendah gluten diolah dengan menambahkan mocaf dan tepung pisang dalam adonan roti. Kombinasi tepung terigu 70%, mocaf 20%, dan tepung pisang 10% menghasilkan roti yang empuk dan mengembang, serta enak. Adanya pengurangan gluten dalam bahan baku menyebabkan jumlah ragi instan dan lama waktu fermentasi adonan meningkat dua kali lipat dibandingkan roti biasanya yang dibuat dengan tepung terigu utuh. Sekitar 30% tepung terigu dalam proses pembuatan roti dapat digantikan dengan kombinasi mocaf 20% dan tepung pisang 10%. Program pengabdian masyarakat ini dapat meningkatkan pengetahuan dan keterampilan anggota PKK di Desa Silo.

Kata kunci: Desa Silo, mocaf, roti, tepung pisang

Abstract

Cassava and banana are the most agricultural commodities grown in Silo Village. Farmers plant these commodities as a response to local needs. In order to add more value to these commodities, the community service team strives to make gluten-low bread by utilizing flours made from cassava (mocaf) and banana. This program was implemented to introduce bread made from mocaf and banana flours as alternatives to wheat flour, as well as enhance the skills and knowledge of the society in Silo village. The methods used in this program were approaching participants and field observation, training program, and accompaniment of participants. The monitoring program was conducted during the accompaniment of participants to check the progress established in the addressed development. The team also provided modules. The group of the Family Welfare Movement in Silo Village was interested in the training program due to the innovation presented. The gluten-low bread was processed by supplementing mocaf and banana flour to the dough. A combination of 70% of wheat flour, 20% of mocaf, and 10% of banana flour resulted in airy and soft bread, as well as a delicious taste. As a consequence of gluten reduction in the raw materials, the amount of instant yeast and the length of time of dough fermentation were increased twice compared to the common bread made from whole wheat flour. About 30% of wheat flour in the bread-making process could be substituted by the combination of 20% of mocaf and 10% of banana flour. The community service program could improve the experience and skills of the group of the Family Welfare Movement in Silo Village.

Keywords: banana flour, bread, mocaf, Silo Village

INTRODUCTION

The Central Bureau of Statistics (2013) reported that Silo Village was one of the largest producers of cassava in Jember City. While it becomes the top cassava-producing village, in the last recent years, many farmers in Silo have also extensively cultivated banana as an annual crop. This is purposed to obtain

additional income for the farmers in Silo Village. More than 20.000 agricultural household business was also established in Silo Village (The Central Bureau of Statistics, 2013), thereby the development of agricultural industries can be advanced to raise the farmers' income continuously.

However, one of the crucial obstacles to be solved is the overstocks of cassava and banana that are still frequently faced by the

farmers. A lot of stock of both commodities in the market compels farmers to keep their crops at home. These are perishable crops thus the farmers are not recommended to store them for a long while. In order to prevent this problem from happening again, a value can be added to the crops by improving their use as well as shelf life. Thus, diversification will expand a local-based economy creative and boosts the village's economy eventually (Fauziyah, Handayani, Susanto, & Rosanti, 2021), as well as health promotion in a local area (Miranti, Purwidiani, Romadhoni, & Ismawati, 2021).

In the form of flour, it can be used for all purposes and stored for a long time. Modified cassava flour (mocaf) has been introduced and even commercialized globally for many years. Since the physical characteristics of the mocaf are quite similar to common wheat flour. This product has gained great acceptance from the customers. Unlike wheat flour, however, mocaf has a low level of protein, mineral, and vitamin (Gunawan et al., 2015). It should be combined with other nutritive materials that can supply the presence of the main nutritive compounds in the final product. In this case, the banana fruit comes to mind due to plenty of its availability in Silo Village and it belongs to nutrient-rich food (Amah et al., 2019). On the other hand, despite banana flour has been commercialized widely but there is no good product, as yet, that the available product is too sour and bitter. In other words, it cannot be used to produce the best flavor or quality of food.

Bread has been consumed by people for a long time ago. Bread has also been made and innovated throughout the years in various types according to the need. The quality of bread is principally determined by the ingredients used, in particular, the flour which is the main ingredient in bread. Further, various properties of bread include its shape, texture, taste, and others can be determined by the different proportions of ingredients. It is also important to note that the combination of mocaf and banana flour as a partial substitution of wheat flour is aimed to diminish the gluten content in common bread made from whole wheat flour. Many sufferers of gastrointestinal syndrome strictly avoid gluten-containing diet which is potentially dangerous to their health (Niland & Cash, 2018).

There are some issues occurred in Silo Village, among other things: 1) there is no added value to their crops especially cassava and banana, 2) there is no processing strategy

for both materials to be a final product (downstream product), and 3) there are no small and or medium enterprises in the field of bakery products. People in this village only sell cassava and banana as fresh products. Lack of advanced knowledge, skills, human resources, and technology are also identified as key factors that cause problems in this village. Therefore, the team of community service program performed the training of bread making process with the substitution of banana flour and mocaf in Silo Village. The team also escorted the partner to start new enterprises successfully and developed the enterprises by prioritizing quality.

METHOD

The methods in this community service program were systematically performed as follows:

1.1. Approaching participants and field observation

The group of the Family Welfare Movement in Silo Village was recruited as the partner in this community service program. About 35 persons were accepted in this program. The program was aimed to tackle the problems and identify the business challenges head on. In order to ease the sustainable production of the bread, the team provided the technology to make banana flour. Banana fruits were provided by the farmers in Silo Village. Meanwhile, mocaf was purchased via online sellers.

This program expects well-qualified human resources can be realized. Skills and insights of the target are expected to much improve since these can help in doing most activities related to the problem faced. In order to disseminate this opportunity to the public, the team published this training in printed and online media.

The team directly visited the designated village center. In this visitation, the team carried out the first approach to the village head of Silo. The team was directly commanded to discuss the program with the Head of the Family Welfare Movement of Silo Village since it was a continuous program as requested last year. The prior program was conducted on the topic of a biscuit-making process from papaya and banana flours. In this visitation, the team was also accompanied by three students of Agricultural Product Technology to observe the situation on the agricultural land. Cassava and banana were overlooked by the farmers due to the

production and stock imbalance and there was no technology available. Therefore, they obviously need to be processed immediately.

1.2. Training program

The program was held at the village meeting hall of Silo. The program was given in the form of an explanation for what this training was urgently needed, as well as the practice and accompaniment. The team also organizes modules as they can be a useful tool for the participants. The background of the training program, mocaf and banana flour making processes, bread making process, and feasibility analysis were provided in the module. During practice, the participants were instructed to make bread in some forms, i.e., braids, rose, snail, and ring. The participants were also allowed to ask confusing statements or the occurrences that appeared during bread processing.

1.3. Accompaniment of participants

A week after the training program, the team monitored the bread selling process. The monitoring program was then conducted once a month. While monitoring the stock of banana flour and mocaf, the evaluation of the other ingredients used was also performed continuously to improve the sensory properties of the bread. Packaging design, promotion, as well as registration and marketing authorization were also included in this program.

RESULTS AND DISCUSSION

A Kepok variety was mostly cultivated by the banana farmers in Silo Village so it was prospective to be utilized in this program. Half-ripe bananas and not rotten were used for processing into flour. Of the total of 7 kg peeled bananas, about 1.26 kg of banana flour was produced. It means that the yield was quite high (as much as 18%) and this flouring process can be a solution to add more value to banana fruits. In addition, the organoleptic properties including taste, texture, color, and odor were still acceptable since bananas have been commonly consumed as part of the human diet over the world for thousands of years. The banana flour making process and its product are shown in Figure 1 and Figure 2, respectively.

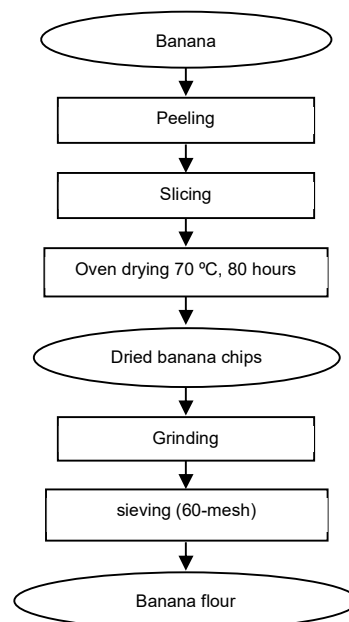


Figure 1. Banana flour making process

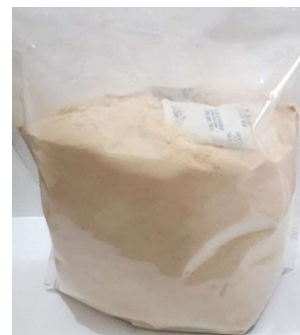


Figure 2. Banana flour

In this program, the team showed dried banana chips to the participants. The oven process of fresh bananas was only demonstrated through a presentation given during training due to the work being done at the campus laboratory. The banana flour used in this program was a product of the modification of the previous method as described by Sukoco and Handayani (2020). The drying temperature used was elevated to rapidly achieve the moisture content of banana chips at about 17% (dry basis), and also to shorten the drying time. This current method only spends 80 hours, which is 40 hours shorter than previous method. Importantly, the current method also employed a 60-mesh screen to obtain better particles of the flour while the previous method still used a 40-mesh

screen. The final product also becomes a consideration since the sensory between bread and biscuit (previous study) could be particularly different in the texture attributes, thereby choosing finer flour is an essential step.

The participants were employed to grind the chips and sieved the coarse flour through a 60-mesh screen to produce finer flour. The use of finer flours will produce high-quality bread than excessively using coarse flours. Such flour particles will lead the bread to become easily puff up when the dough is being baked.

In this program, the banana flour was combined with mocaf as substitution flour for wheat flour to make a soft gluten-low bread. They cannot substitute a whole part of wheat flour due to the absence of gluten will not provide the proper characteristic of the bread. Hence, the percentage used between flours was 70% (wheat flour), 20% (mocaf), and 10% (banana flour). The ingredient used in making soft and puffy bread is presented in Table 1. Importantly, the ingredients can also be modified to strive for consumer delight.

The team ordered the participants to follow the procedure of the bread-making process as follows:

- 1) Weigh all ingredients needed (Table 1).
- 2) Put all ingredients in a mixer bowl and thoroughly add butter and salt.
- 3) Mix the mixtures for about 15-20 minutes until the dough feels soft and uniform.
- 4) Close the bowl using plastic wrap.
- 5) Let the dough rise for about an hour.
- 6) Punch the dough down.
- 7) Divide the dough into 15 g per piece.
- 8) Let the dough rest to \pm 40 minutes.
- 9) Bake in the oven at 180 °C for \pm 15 minutes.
- 10) Grease the top of the hot bread with butter.

The product of gluten-low bread is presented in Figure 3. It is important to emphasize that the use of instant yeast and the length of fermentation time were also substantially increased. A common use of instant yeast in making bread is only 6 g for 250 g of dough made from whole wheat flour but 10 g of instant yeast should be added to the bread made from the combination with gluten-free flour. Also, the fermentation time takes longer than common bread made from whole wheat flour, in which an hour of fermentation should be applied to allow the dough to rise optimally. The shorter fermentation time, the dough could not rise

properly and eventually affects the characteristic of the baked bread.

Table 1. Baking ingredients

Ingredients	Amount
High-protein wheat flour (g)	350
Mocaf (g)	100
Banana flour (g)	50
Instant yeast (g)	20
Salt (g)	1.5
Sugar (g)	120
Butter (g)	120
Pasteurized milk (mL)	240
Yolk (g)	80



Figure 3. Fluffy bread greased with butter

The group of the Family Welfare Movement of Silo Village (Figure 4) was greatly impressed and interested in this program when they saw the grinding process of dried banana chips to obtain banana flour. The previous program only processed the banana fruits into the fried sweet banana chips and there was no innovative action added. The food products made with banana fruits have been available in some markets, yet interestingly the bakery product from banana fruits to produce gluten-low bread may not have been available in other similar markets. Therefore, this program was carried out to introduce gluten-low bread made with banana fruits. Further, they were also attentive to the bread-making instructions given by the team. In the end, the current program compares with other previous programs conducted in Silo Village showed that the innovative action and accompaniment of participants have been performed properly.



Figure 4. The group of the Family Welfare Movement of Silo Village

CONCLUSION AND SUGGESTION

Conclusion

- The combination of mocaf and banana flour could be possibly used to substitute 30% of wheat flour in the bread-making process.
- This community service program is essential for introducing a product innovated by researchers or institutions to society.
- While disseminating a new product to society, this product could be a home business idea.
- Skills and knowledge of society could also be enhanced through this program.

Suggestion

Furthermore, the involvement of other parties such as start-up and food industries to support this program in Silo Village could possibly be essential for the future program.

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