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Innovation in Scad Mackerel (*Decapterus* spp.) Processing Into Economically Valuable Products for Improving The Skills of Coastal Communities in Nambo Village

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ABSTRACT

Scad Mackerel (Decapterus spp.) is the main consumption commodity of coastal communities in Nambo village. Apart from public awareness is quite high, the price is affordable, and has nutritional value since unsaturated fats is low, so it good to consume for all ages. The public lack of knowledge about proper fish management. The solution is to provide an understanding of fish processing techniques so be more selling, delicious and nutritious, as well as for community empowerment with the aim of creating fisheries entrepreneurs. The method was the lecture method, socialization and training to the community as an empowerment effort to improve knowledge, skills and well-being. The implementation of the service in the form of location surveys, coordination with local regional chief of village and PKK administrators, preparation of equipment and materials, and some processed samples of fish, socialization about the benefits of fish and fish processing training.

Keywords: Empowerment of coastal communities,fish processing, Nambo Village

INTRODUCTION

The Covid-19 pandemic poses a major threat to society because of its link to the immune system. So that everyone in all levels of society, including coastal areas, is required to maintain stamina both physical and mental. The public is required to keep nutrition fulfilled so that the body's endurance is maintained, so that the risk of exposure to dangerous viruses can be minimized. Nutritional stability describes the quality of human resources, to support growth, development, increase work productivity and suppress mortality and morbidity. Immunity can be affected by the efforts of the community itself in maintaining nutritional balance, although exposure to Covid-19 cannot be prevented by food (Aman and Masood, 2020) however the habit of consuming nutritious foods will reduce the risk of being infected with Sars-CoV-2 (Arief et al. 2008).

Vitamins and minerals play an important role in improving immunity so it also plays a role in the handling of viral infections in general. Food commodities that meet the needs of macro and micro nutrients are fish. Fish can be one of the foods that can increase immunity so as to minimize the risk of infection with pathogens (Butler and Barrientor, 2008; Jubaedah et al., 2021), due to the complete content of nutrients such as vitamins A, B, C, D, E, and minerals such as salinium, iron, and zinc as well as the high content of protein and omega 3 and omega 6 fatty acids and low saturated fat (BPS, 2015). Fish can be consumed in all age groups because the nutrients contained in fish provide a nutrition booster effect in the body in preventing pathogenic infections from bacterial, fungal and viral groups. Sumarni (2020) explained that maintaining an ideal body weight and balanced nutritional intake, able to keep the body from infection attacks (BPS, 2020). Consumption of protein in pandemic times becomes necessary and important to do, because protein can increase the formation of immunoglobulin antibodies

(Ig). Specific immunoglobulins that play a role against the SARS-Cov 2 virus are IgM and IgG (Hadinoto and Idrus, 2018).

Nambo Village is a coastal area located in Kendari City, so fish commodities, especially Scad mackerel (*Decapterus* spp.) are easy to obtain. Statistic of Indonesia-Sulawesi Landmark data reported that Scad mackerel (*Decapterus* spp.) production increased by 20% in 2015 (Hadinoto et al., 2017) and continues to increase annually. In 2019, the volume of Scad mackerel (*Decapterus* spp.) trade reached 9164.38 tons (Hidayatullah et al, 2016). However, the increase in the production of Scad mackerel (*Decapterus* spp.) is inversely proportional to the rate of processing. The increase in fish production that occurs every year should be directly proportional to the increase in economic income of the people in Southeast Sulawesi, especially the Nambo Village area. However, the reality in the lives of many people is still lacking financially. The processing of fishery products has not been maximally carried out by the community. Scad mackerel (*Decapterus* spp.) is only consumed as fresh or salted fish or as bait for greater fish catch by fishermen of coastal areas, especially Nambo village area. The fact is that Scad mackerel (*Decapterus* spp.) has the potential to be developed into a selling product, which is processed into raw materials for fish sausage products (Yanti et al., 2019). Food processing with fish and high protein levels can maximize the use of Scad mackerel (*Decapterus* spp.). Processed fish that vary can improve nutrition and reduce the consumption of instant foods that affect health.

This community service activity is carried out to (1) expand the insights and knowledge of the community in Nambo village regarding the potential and utilization of fishery products as healthy foodstuffs; (2) improve people's skills in processing food into processed products of economic value; (3) improve the ability of the community in producing food processed variations on a small industrial scale (home industry); (4) improve the ability and skills of the community in producing food products that are worth selling so as to open new business opportunities for the local community that can increase the income of the community in Nambo.

The training program in the form of business innovations based on fish as a high-protein food during the covid-19 pandemic in Nambo village is generally expected to ease the burden of pandemic-affected communities that urgently need food consumption stability with balanced nutritional content and become an additional source of family finances.

Based on this, this devotional activity proposes solutions to overcome the problem of fulfilling balanced nutritious food in the form of high-protein foods to maintain immunity in pandemic times and improve the family economy during pandemic times.

METHODS

This activity was held in July to August 2021, located in Nambo Village, Kendari City. The method of implementing this program is to socialize about training innovations in processing Scad Mackerel into sausages to the community, especially Village Midwives and Cadres of Nambo village. The method of implementation of devotion is broadly implemented in the following stages:

1. Socialization: This socialization is carried out by a lecture method that aims to provide understanding, insight and knowledge to the partner community when giving material, as well as the method of discussion / Q&A so that the interactive atmosphere between participants and speakers and between participants themselves can be achieved.
2. Guidance and training: Providing skills training in the form of demonstrations/simulations directly by actively involving participants, how to process fish processing through appropriate technology based on biotechnology produces food processed products that are attractive, healthy and nutritious. As well as providing packaging training and marketing of food products in demonstration. Entrepreneurship training and business management through lectures and discussions
3. Monitoring and evaluation. This is to find out the response of participants as well as the Village Midwives and Cadres of Nambo Village to training activities.

4. Problems that arise related to the realization of the results of training activities will be able to be given solutions.

3.1 How to Make Scad Mackerel (*Decapterus* spp.)

Material:

1. 700 grams of fish paste
2. Lime
3. yogurt
4. Wheat flour 200 grams
5. Tapioca flour 50 grams
6. Salt to taste
7. Flavoring to taste enough
8. Garlic 4 cloves

3.2 Dough Making

1. Prepare single fish as much as 3 tails (approximately 700 gr) then clean the fish to taste.
2. Separate the fish meat from the bones, then Add a squeeze of lime to remove the fishy smell in the Scad Mackerel (*Decapterus* spp.).
4. Prepare fine garlic
5. Blender the fish by adding a little ice cube. After the fine fish insert into the container then mix the garlic to taste, 3 tbsp flour sajiku, 4 tbsp tapioca flour and add flavoring to taste stir evenly and add 1 tbsp yogurt.

3.3 Filling dough into the casing

The dough that is ready to be put in a casing or plastic using a stufler. Try not to have air cavities in the casing. The size of the sausage is adjusted then in the tie. Ferment for 1 time 12 hours at room temperature

3.4 Steaming

Steaming of fish sausage is done twice into hot water with a temperature of 60^{o}C for 20 minutes and at 90^{o}C until cooked. Once cooked lift and drain.

3.5 Storage

Fish sausages can be stored in the refrigerator to extend the shelf life. Sausages can be served directly after boiling / steaming or served, with first fried fish sausage with (3 − 5 minutes) and given sambal and ketchup.

RESULTS

The results of community service activities carried out on Village Midwife and Cadres of Nambo Village, Kendari city include: 1) as many as 20 participants who participated in socialization and training in making Scad Mackerel (*Decapterus* spp.) sausages understand the importance of consuming fish, participants gain knowledge about the nutritional content of fish and how to choose, process and use fresh fish, 2) Participants know that fish body parts can be processed into delicious processed products and how to easy. 3) Participants of the activity get the skills to make food from Scad Mackerel (*Decapterus* spp.) based which has only been processed wet for household consumption. 4) Processing of Scad Mackerel (*Decapterus* spp.) products in this devotional activity into Scad Mackerel sausages as stated in **Figure 1** and **Figure 2.**

After the fermentation process in processed products of Scad Mackerel (*Decapterus* spp.) into fish sausages, it is seen that the structure of the sausage produced is more chewy and smooth and has a distinctive aroma and white color. This is based on interviews with trainees. Participants are asked to conduct an assessment of the taste, texture, and aroma of the processed products of the Scad Mackerel (*Decapterus* spp.).

DISCUSSION

Sausage is one of the processed meat products with a high nutritional content by using meat or by innovating the use of fish meat as a basic ingredient (Yanti et al., 2019; Rifa'i et al., 2021; Jubaedah et al., 2021). Scad Mackerel (*Decapterus* spp.) commodities, have a high nutritional content with a protein content of 22 g and fat of 1.7 g (Khem et al, 2013). Low saturated fat in Scad Mackerel (*Decapterus* spp.) makes it worth consuming by various age groups. With the innovation of making fermented sausages through the application of fermentation techniques provide more quality and nutritious processed products and rich in flavor.

Fermented sausages are processed products produced by lactic acid microbes. Such microbes may come from meat or from the addition of *lactobacillus* or *pediococcus* group starter bacteria or a mixture of *Micrococcus* and *Lactobacillus* (Nursyam, 2011a; Nursyam, 2011b; Yanti et al., 2019; Sumarni, 2020; Sun et al, 2020,; Zhang et al 2020). To prevent damage or extend shelf life and produce products with aroma, texture and good taste, fermentation techniques become an effective way of processing fish meat into fermented sausages, so that processed products can be accepted by consumers.

The process of activities initiated by demos and lectures related to information about basic ingredients, nutritional content, and advantages of single fish sausage products, was followed by the involvement of 20 participants consisting of Village midwives and cadres of Nambo village as well as the fishermen. Making food products made from single fish as snacks or supplements with guaranteed nutrition is quite easy and simple and does not require special skills. The materials used are easy to obtain and process. With the provision of rigor and patience in following each stage of making, sausage products can be made easily and finished products can be directly enjoyed and can also be stored as food stock in the form of frozen food. The next process is packaging and labeling the product. This devotional activity produces examples of snack food products that can be enjoyed directly by participants. After the practice of making and packaging is completed continued with the provision of materials how to market single fish sausage snack products (*Decapterus* spp.).

Products that have been made can be served by eating directly or fried. Service products can be stored as frozen food and can last up to 3 months of storage. Scad Mackerel sausage made from the mixing of Scad Mackerel (*Decapterus* spp.), garlic, yogurt. squeeze the lime, and flour.

At the end of the event, participants are interviewed about criticisms and suggestions and messages and impressions related to the implementation of activities. The aspects reviewed include all stages of the implementation of the activity. Based on the results of criticism and suggestions show that the citizens of the community are very happy with this activity. According to the community, making food products made from single fish is new and useful both for self-consumption and for trade.

CONCLUSIONS And RECOMMENDATIONS

The results ofScad Mackerel sausage training are as follows: 1. The resulting sausage is very satisfying, easy to make and economical according to the trainees. 2. Sausages can be stored for a long time in the form of frozen foods so that they can be consumed at any time. 3. Scad Mackerel sausage products can be sold so that they can make a profit or increase family income. 4. Nambo village community is very enthusiastic about participating in activities, especially the village midwives and cadres of Nambo Village because making food products made from single fish is new and has benefits either for consumption or to be an economically valuable processed product.

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APPENDIX

Figure 1. The stage of training implementation in the form of demonstrations of how to make fermented Scad Mackerel sausages

A B

Figure 2. A. The processing stage of scad mackerel sausage for organoleptic testing. **B.** scad mackerel sausage products after packaging