Sensory Characteristics of Sheredded Spiced Fish Formulation

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Abstract

Shredded fish is a processed fish based product that is widely known by the public. Shredded spiced fish is a innovative diversification of shredded fish product made from ranau tilapia fish with the addition of multi spices. Multi spices are known to have high antioxidant content, so they can improve the quality and develop the taste of shredded spiced fish product. The multi spices seasoning formulation and process stages greatly influence the characteristics of the shredded produced. This research aims to study the formulation and treatment of the sensory characteristics of the best shredded spices fish. The research result showed that the shredded spiced fish product with sample code 212 (without stir-frying) produced the best characteristics with a texture parameter value of 3,85; fragrance 4,05; colors 4,85; and tasted 4 with a total score of 16,75.

Keywords: Shredded fish, ranau tilapia, multi spices, sensory, stir-frying

1. Introduction

Fish is a source of animal protein which has a high protein content besides meat, eggs and milk. Fish as a source of protein is widely liked and sought after by the public because it is relatively cheap compared to other protein sources, so it is widely used as a processed food ingredient.

Ranau tilapia is a type of fish cultivated by local people in Lake Ranau. Lake Ranau is a lake located in West Lampung Regency, Lampung Province and South Ogan Komering Ulu Regency, South Sumatra Province. This type of Ranau tilapia is different from tilapia in general. This fish is characterized by a larger size, physically darker color, thicker fish flesh, a savorier taste, and no muddy smell. Based on these characteristics, Ranau tilapia is more popular with the public [1]. One of the uses of Ranau tilapia is to make shreded fish products.

Shredded fish is a type of processed fish product that is shredded and added with spices. Shredded spiced fish is an innovative diversification of shredded products made from Ranau tilapia fish and the addition of multi-spices. Tilapia has a protein content of 43,76%, fat 7,01%, and ash content 6,80% [2]. Spices contain bioactive components that act as antioxidants and antibacterials. The addition of multi-spices in making shredded spiced fish, apart from

providing flavor, also develops the content, namely making shredded spiced fish rich in protein and antioxidants.

The process of making shredded fish includes weeding, steaming, mixing spices, stir-frying, and roasting. Shredded fish products are characterized by a soft fiber texture, distinctive aroma and taste, and relatively long shelf life. The process of making shredded fish using several cooking methods produces different characteristics of shredded fish, so research needs to be carried out regarding the effects of cooking. This research aims to examine the formulation of shredded spiced fish with the effect of stir-frying and without stir-frying on the sensory characteristics of shredded spiced fish.

2. Material and Methods

2.1. Time and Place

This research was carried out at the Agricultural Product Processing Laboratory and Sensory Laboratory, Department of Agricultural Product Technology, University of Lampung. The research was carried out in September 2023.

2.2 Materials and Tools

The main raw material used is ranau tilapia. The multi-spice ingredients used are ginger, galangal, lemongrass, turmeric, pepper, coconut milk, garlic, shallots, curly red chilies, bay leaves, lime leaves, salt and sugar.

The tools used are a steamer, basin, knife, chopper, frying pan, analytical scale, cutting board, tray, spoon and bowl.

2.3 Research Methods

Ranau tilapia is weeded and the entrails and gills removed, then washed until clean. Next, the clean fish is steamed until cooked, then the fish is drained. Then the spines are separated and the tilapia is shredded.

The multi-spices that will be used are prepared first, including ginger 0,6%; galangal 0,5%; turmeric 0,7%; pepper 0,25%; garlic 3,2%; red onion 6,5%; curly red chilies 10%. The spices are ground using a chopper. After the spices are ground, in the first treatment, namely without stir-frying, the spices are mixed into the shredded fish, then 50% coconut milk, 1.3% lemongrass, 4 bay leaves, 4 lime leaves, 3% salt and 4 sugar are added. 5%, then roasted until cooked. Meanwhile, in the second treatment, namely stir-frying, the steps are the same as above, except that the ground spices are stir-fried first before being mixed into the shredded fish.

2.4 Organoleptic Testing

Organoleptic testing is carried out using a scoring test, with a scoring scale consisting of a score of 1-5. The scoring test aims to provide an assessment based on the quality characteristics of spiced shreded fish which includes texture, aroma, color and taste. Samples that have been coded are presented randomly to the panelists, then the panelists are asked to provide values according to the parameters listed.

3. Result and Discussion

3.1. Texture

Texture is a very important sensory parameter for shredded products, because texture is one of the things that differentiates shredded products from others, namely the presence of fine and soft fibers. Texture testing is carried out using the sense of touch. The texture of the shredded spiced fish can be seen in Figure 1.

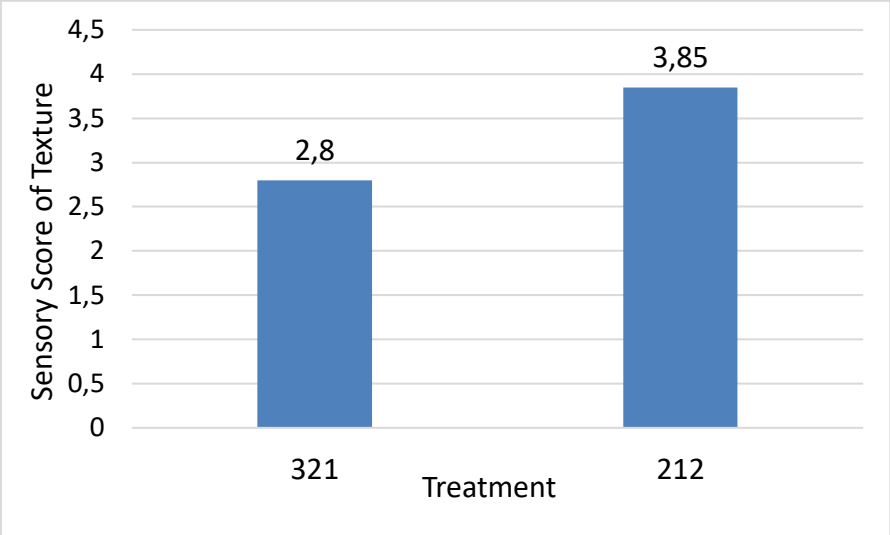

Figure 1. Sensory Diagram of the Texture of Shredded Spiced Fish

Information:
321: with stir-frying
212: without stir-frying

Based on Figure 1, it shows that the highest sensory value for texture parameters was found in treatment 212 at 3,85. The resulting texture has the typical smooth and fibrous texture of shredded meat. It is known that the treatment affects the resulting texture. The panelists preferred shredded spiced fish treated without stir-frying compared to stir-frying, because during the stir-frying treatment the spices were slightly clumped so that the texture of the shredded meat became lumpy and less fibrous. In line with [3] states that the texture of shredded meat is determined by the roasting process, the outer part of a material will shrink due to dehydration during the process and will form pores on the inside, making the product have a drier and smoother texture.

3.2. Color

Color has a very important role in a product or food commodity. The appearance of color attracts panelists or consumers to taste the product, thereby giving the quickest impression regarding whether they like or dislike the product. The results of sensory test observations on the color of shredded spiced fish can be seen in Figure 2.

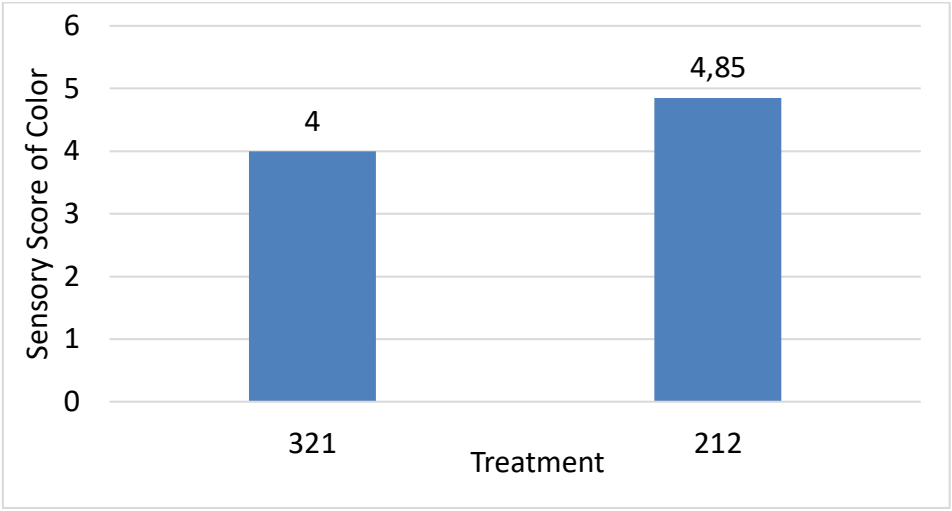

Figure 2. Color Sensory Diagram of Shredded Spiced fish

Information:
321: with stir-frying
212: without stir-frying

Figure 2 shows that the highest score is found in the sample with code 212 (without stir-frying), namely 4,85 with a yellowish-brown color specification. The flesh of Ranau tilapia is white, when the roasting process is carried out it changes to yellowish brown. This change is caused by a non-enzymatic browning reaction due to the presence of protein, reducing sugars and the heating process. The Maillard reaction causes the loss of amino acid residues and decreases protein digestibility[3], [4].

3.3 Aroma

Aroma is an important factor in a food product because it determines the panelists' level of acceptance and knowledge of the ingredients contained in the product [5]. The results of the sensory test for the aroma parameters of spiced shredded fish can be seen in Figure 3.

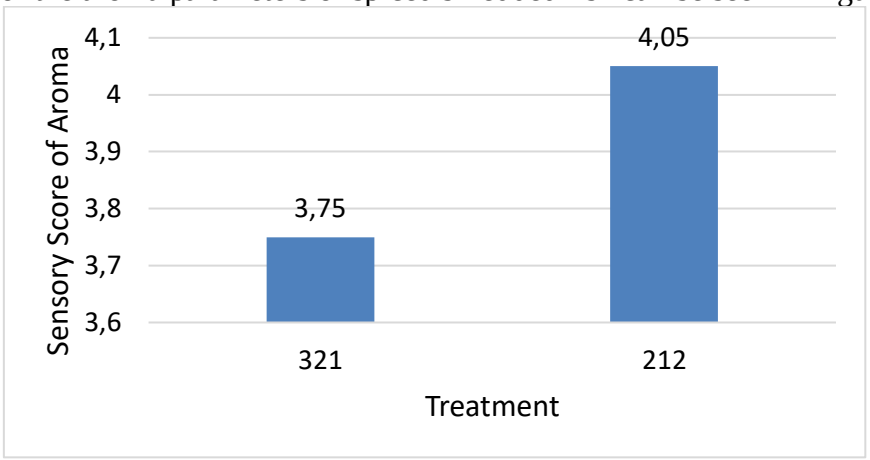

Figure 3. Sensory Diagram of the Aroma of Shredded Spiced Fish

Information:
321: with stir-frying
212: without stir-frying

In Figure 3 it can be seen that the highest sensory parameter value for aroma is found in sample code 212 (without stir-frying) with a value of 4,05, which is very typical of shredded spiced fish. The difference between the two treatments was that in the treatment with stir-frying the aroma produced was more dominant than the aroma of fish compared to multi-spice, while in the treatment without stir-frying the aroma of both was present. This is because in the stir-frying treatment, the multi-spice seasoning is stir-fried first so that the distinctive aroma of the spices will disappear due to the heating process, in contrast to without stir-frying the multi-spice spices are mixed directly into the shredded fish so that the aroma of the spices is more absorbed and the resulting product has a distinctive fish aroma. and spices.

The aroma of the shredded fish produced is influenced by the spices and cooking process. The spices used will provide taste and aroma to the product. The aroma that appears is caused by the softening of the texture and loss of cell integrity so that the essential oils contained in the spices will react with the ingredients and cause a change in flavor. Apart from spices, the aroma that appears is also caused by a decrease in the content of amino acid and fat compounds due to heating [6], [7].

3.4 Flavor

Taste is an important sensory parameter for a food product. Taste attributes consist of sweet, bitter, sour, salty and umami. The sensory taste of shredded spiced fish products can be seen in Figure 4.

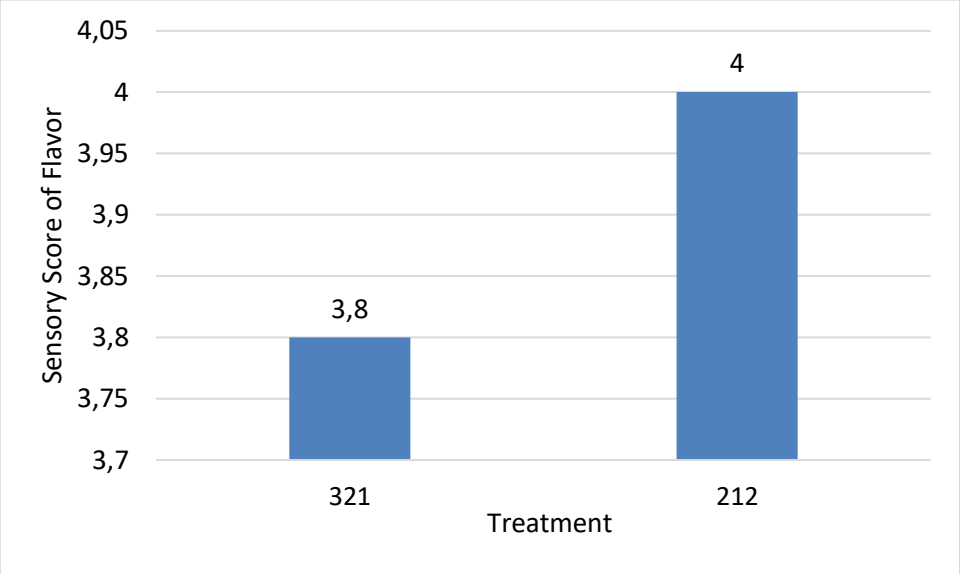

Figure 4. Sensory Diagram of the Taste of Shredded Spiced Fish

Information:
321: with stir-frying
212: without stir-frying

As seen in Figure 4, the sensory taste values in the two treatments do not have a very wide range because they use the same shredded spice formulation, only the cooking treatment is different. The highest sensory test score was found in sample 212 (without stir-frying) with a score of 4, which is very typical of spiced shredded fish. The taste specifications of the shredded meat are that it has a savory, sweet, slightly spicy and distinctive spice taste.

The savory taste comes from the raw material, namely ranau tilapia fish. The protein content in a food will produce a savory taste. Apart from that, the additional ingredients used, namely multi-spice, produce a distinctive spiced taste, thus adding to the deliciousness of the shredded spiced fish product. According to [8] the taste contained in an ingredient or food product comes from the raw material itself and additional ingredients used during the processing process such as spices.

3.5 Selecting the Best Treatment

Whether a product is accepted or not by consumers is determined more by its organoleptic or sensory properties, because it is directly related to consumer tastes [9]. The selection of the best treatment is determined based on the results of weighting the sensory properties of texture, color, aroma and taste. The weights obtained for each parameter are compared with each other. The formula with the highest weight is considered the best treatment. The recapitulation results of the weighting of the best treatment for shredded spiced fish products can be seen in Figure 5.

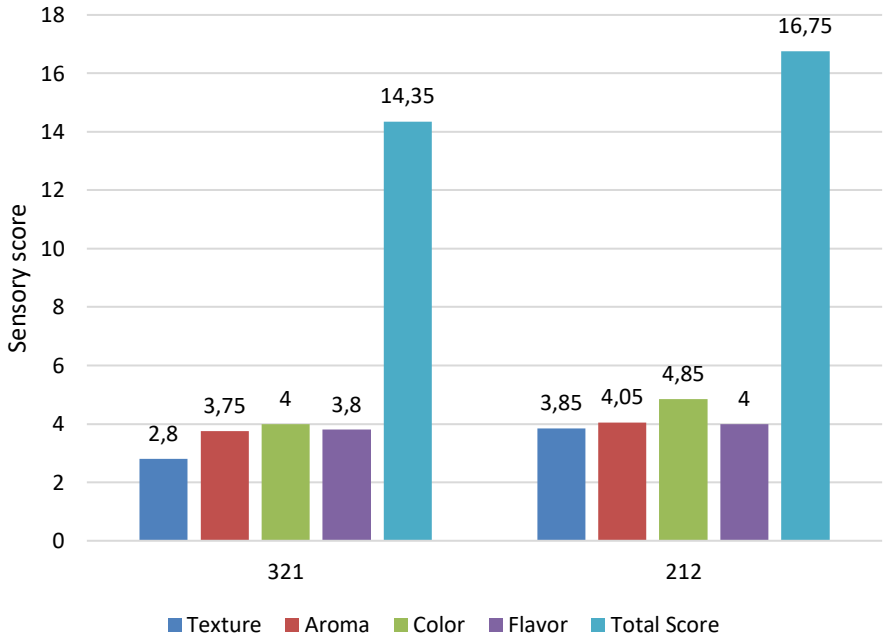

Figure 5. Recapitulation Diagram Selection of the Best Treatment for Shredded Spiced Fish
Information:
321: with stir-frying
212: without stir-frying

Based on Figure 5, you can see the weighting results for each treatment. Between the two treatments, the best treatment was obtained for the shredded spiced fish product, namely treatment 212 or without stir-frying with a weight of 16,75.

4. Conclusion

Based on the research that has been carried out, it can be concluded that the treatment formulation most preferred by consumers is the shredded spiced fish product without stir-frying

with an assessment weight of 16,75 and has the best sensory score with a texture score of 3,85 (smooth and fibrous typical of shredded), a color score of 4,85 (yellowish brown), aroma score 4,05 (very typical of shredded spiced fish), and taste score of 4 (very typical of shredded spiced fish).

References

[1] Wibowo, T.A., Untari, D.S., dan Anwar, "Tingkat Penerimaan Masyarakat Terhadap Ikan Nila (Oreochromis niloticus) Segar dengan Habitat Yang Berbeda," *J. Ilmu Perikan.*, vol. 12, no. 1, pp. 72–79, 2021.

[2] Souhoka, E., Smith, A., dan Arini, "Penambahan Ekstrak Daun Kemangi dan Lama Perendaman terhadap Mutu dan Daya Awet Ikan Nila (Oreachromis niloticus) Segar," *J. Biol. Pendidikan, dan Terap.*, vol. 6, no. 1, pp. 7–11, 2019.

[3] Sinambela, T. A., Putri, R. W. S., dan Apriandi, "Pemanfaatan Daging Trimmed dan Belly Ikan Todak (Tylosurus crocodilus) Pada Pembuatan Abon Ikan," *Marinade*, vol. 3, no. 1, pp. 102–113, 2020.

[4] Bonisya, "PENGARUH PENAMBAHAN JERAMI NANGKA (Artocarpus Heterophyllus) TERHADAP KADAR SERAT DAN DAYA TERIMA ABON IKAN NILA MERAH (Oreochromis Niloticus)," *Pontianak Nutr. J.*, vol. 2, no. 1, p. 15, 2019, doi: 10.30602/pnj.v2i1.479.

[5] Patang dan Jusniati, K, "Pembuatan Abon Ikan dari Jantung Pisang (Musa Paradisiaca) dengan Penambahan Ikan Tongkol (Euthynnus affinis)," *J. Pendidik. Teknol. Pertan.*, vol. 3, pp. 58–66, 2017.

[6] Mustar, "Studi Pembuatan Abon Ikan Gabus (Ophiocephalus striatus) Sebagai Makanan Suplemen (Food Suplement)." 2013.

[7] Prihandoko, S., dan Mawarti, "Pengaruh Substitusi Nangka Muda (Artocarpus Hetero_phyllus) Terhadap Sifat Kimia Dan Sensori Abon Ikan Gabus (Chanta Striatus)," *J. Teknol. Pertan. Univ. Mulawarman*, vol. 10, no. 2, pp. 58–64, 2015.

[8] Rohmawati, N., Sulistiyani, dan Ratnawati, "Pengaruh Penambahan Keluwih (Artocarpus camasi) terhadap Mutu Fisik, Kadar Protein, dan Kadar air Abon Ikan Lele Dumbo (Claris gariepinus)," *J. IKESMA*, vol. 9, no. 2, pp. 127–135, 2013.

[9] Negara, J. K., Sio, A. K., Rifkhan, Arifin, M., Oktaviana, A. Y., Wihansah, R. R. S., dan Yusuf, "Aspek Mikrobiologis serta Sensoris (Rasa, Warna, Tekstur, Aroma) pada Dua Bentuk Penyajian Keju yang Berbeda," *J. Ilmu Produksi dan Teknol. Has. Pertan.*, vol. 4, no. 2, pp. 286–290, 2016.