

# Diversification and Characterization Taste of Tuna ‘Pucuk Meatballs’ with Caisim (*Brassica Juncea L.*) As the Natural Dye

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**Abstract:** A fish has the natural perishable character because of the high concentration of water. The fish production have to be utilized in fast and accurate before the spoilage caused by the bacterial activity. One of the ways on utilizing fish is to be prepared as diversification products which is meatballs, and ect. The production of Tuna meatballs in Regency of Morotai Island is still in the standard level that probable to be improved. The improvement of the meatballs was made with the use of natural dye. One of the natural dye that can be used as food extraction (BTP) is Caisim (*Brassica juncea L.*). The purpose of this research is to create the meatballs product with Caisim (a kind of Chinese vegetable) and evaluate the product’s characteristics used the organoleptic test. The production was made at the Laboratory of Fisheries and Marine in University of Pacific Morotai. There were 50 untrained panelists. The result of this research is the diversification of Tuna meatballs with natural dye Caisim (*Brassica juncea L.*) is successfully made and named with ‘Pucuk Meatballs’ (Bakso Pucuk). The Characteristics product of ‘Pucuk Meatballs’ has a smooth surface, not bladdery, and bright; the product’s specific fragrance; also, compact and rubbery texture.

**Keywords:** Meatballs, caisim, Morotai island

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## 1. Introduction

A fish has the natural perishable character because of the high concentration of water. The fish production have to be utilized in fast and accurate before the spoilage caused by the bacterial activity. One of the way on utilizing fish is to be prepared as diversification products which is meatballs, sausage, nugget, and so on. Meatball is a diversification product that admired for all ages, with a specific taste that suit to enjoy in any times (Wibowo, 1995). According to SNI 01-3818-1995 meatballs is a food product in rounded shapes or others that made from the mixture of meat (not less than 50% meat concentrated) and starches or cereals with or without any

other ingredients. According to Suprapti (2003), the raw material of fish meatballs can be from many kinds, right from freshwater or saltwater fish.

The fisheries potential in the Regency of Morotai Island on 2022 is 4.716 tons which from big and small Pelagic fish, demersal fish, and shrimps to clams (BPS Regency of Morotai Island, 2022). Tuna is the prime commodity in Regency of Morotai Island (Sofiati, 2016). From the Central Bureau of Statistics (BPS) data that the total production of Tuna in 2022 reached half of the production which is 2.612 tons. This high potential have been utilized for the

improvement of fish meatballs products. However, the fish meatballs production was still in the standard level that potentially to be improved.

The development of meatballs can be made with the addition of food extraction for the taste and nutritive values. Saparinto & Hidayati (2006), said that the purpose on adding the food extraction (BTP) in generally is to increase the nutritive values, to fix the anesthetic value and food sensory, also to extend the shelf life. Based on Ministry of Health Regulations, Republic of Indonesia No. 033 Year 2012 that food extraction (BTP) is consist of food dye, flavoring of taste and smell, preservation, and coagulation. Specifically for the food dye, the food extraction (BTP) made up by natural which is from the food with special color and the artificial dye. One of the natural dye that can be used as food extraction (BTP) is Caisim (*Brassica juncea L.*).

Caisim is the vegetable with high economical values after cabbage, cauliflower, and broccoli (Marginingsih et al, 2018). It contained many nutrients (proteins, fats, carbohydrates, Ca, P, Fe, Vitamin A, B, and C) also has many benefits for body that suited as the food extraction for fish meatballs production. The addition of natural food dye on meatballs have been done before, one of it with red dragon fruit (Suharyanto et al, 2021); Moringa leaves (Cahyaningati & Sulistiyati, 2019); and carrot (Renate & Nurlismita, 2015). Caisim has not been used as food extraction (BTP) to fish meatballs, so that the update from this research for the meatballs with Caisim as the natural dye.

The purpose of this research is: to create the product of meatballs with natural dye from Caisim and to evaluate the product's characteristics from the production using sensory test/organoleptic test. The product from this diversification will be named 'Pucuk Meatballs' (Bakso Pucuk).

## 2. RESEARCH METHOD

The research was held on 22 October to 6 November 2022 at the Laboratory of Fisheries and Marine Faculty in Pacific Morotai University. The tools that used there were meat grinder, thermometer scales, stationery, and panelist's evaluation instruments. The materials that used in this research there were Tuna, Caisim, tapioca flour, onions, garlicks, salt, flavoring (Miwon), pepper powder, broth powder (Royco),

frying oil, baking soda, jelly (Bola Bumi), white egg, and ice. The research procedure was divided in to 3 , there are 1) made the shape of fish meatballs with Caisim as the natural dye; 2) the panelists evaluation to the organoleptic product and the pleasure level (hedonic test); 3) the interpretation result in descriptive form and tables or pictures for sensory/organoleptic test. The 50 panelists were the consumer panelist. The panelists were choosing in randomly. From Betty & Tjutju (2011), said that the panelist is people who have the ability of sesory that can be used to analyze and evaluate the characteristics of the that tested by author.

## 3. RESULT AND DISCUSSION

### 3.1. Deskripsi of Products

The green fish meatballs that made from additional ingredient Caisim as the natural dye. This innovated meatballs is the result from processing fish, Caisim's essence that mixed and smashed with tapioca flour, and the other spices next, made to be ball shaped, then boiling it. This green meatballs named 'Picik Meatballs' as like on Figure 1. The tapioca flour used as the additional ingredient in Tuna meatballs process, that functioned to stick and bind the other ingredients, then become more tasty, good texture, more rubbery, and high-quality. The flour concentration that used is 10-15% from the meat. For the other ingredients were used as the rubbery to the meatballs, which is white eggs, baking soda, and jelly (Bola Bumi). Then to the other ingredients too were used for the meatballs production that functioned for the taste, there were onions, garlicks, salt, pepper powder, flavoring (Miwon), and broth powder (Royco). As for the Tuna meatballs with natural dye from Caisim can be seen at on Figure 2.



Figure 1. The innovation result of fish meatballs

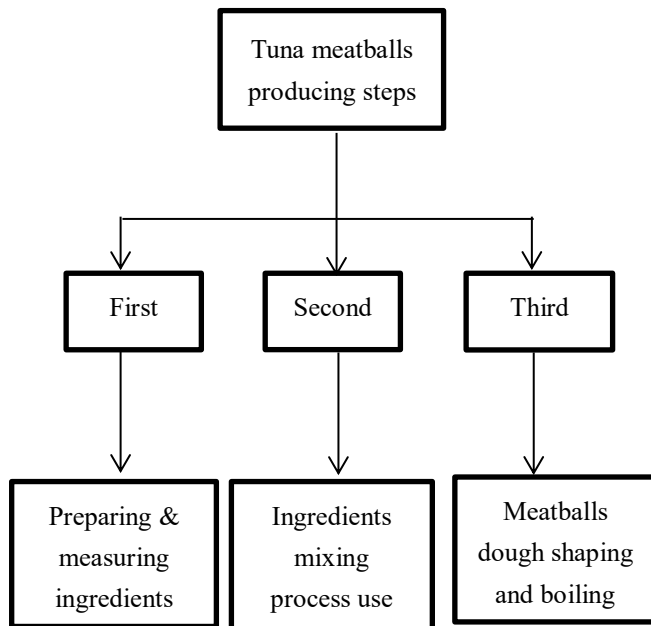


Figure 2. Fish meatballs producing steps

### 3.2. Organoleptic Test Results

The organoleptic test has done by 50 consumer panelists to give the objective evaluation of 'Pucuk Meatballs', the Tuna meatballs with natural dye Caisim. The indicators to be evaluated for the panelists are the appearance, smell, taste, and texture. The evolution results represented as below.

#### a. Appearance

The appearance is an important factor for food product. The appearance can be an attraction on the consumer to the consumed product. The appearance of Tuna Pucuk Meatballs is green with rounded shape but not completely and the surface that not really smooth. The organoleptic test result for 'Pucuk Meatballs' appearance from 50 panelists is on the Figure 3.

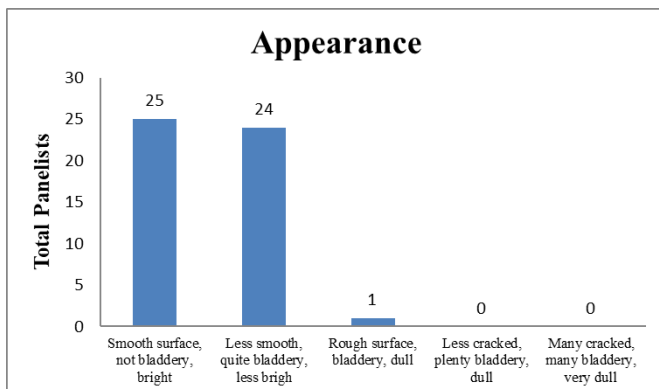


Figure 3. Panelists evaluation results to organoleptic test of appearance

From the graphic on Picture 3. that panelists evaluated the tuna meatballs used Caisim as the natural dye has with smooth surface, non-bladdery, and bright criteria were the most chosen by 25 people. There were 24 panelists that evaluated the product with less smooth surface, less bladdery, less bright. The criteria of rough surface, bladdery, and dull were the most less chosen by only 1 panelist. The result of organoleptic test showed that the pleasure level of panelists was the highest.

#### b. Smell

The smell is a substance or a certain components that has a several functions in a food, which is can fix or make the product value become higher however it is also can decrease the value if it has a putrid smell. Here us the graphic of panelists evaluation results for the organoleptic test of smell or fragrance.

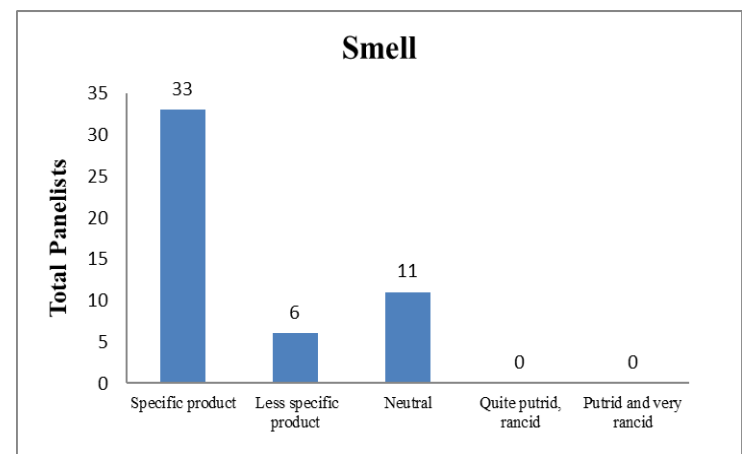


Figure 4. The panelists evaluation for organoleptic test of smell

From the graphic on Figure 4. That there were 33 panelists evaluated the 'Pucuk Meatballs' has a specific smell. The less specific smell was chosen by 6 panelists, 11 panelists for neutral smell of the product. From this result, it showed that the smell from product 'Pucuk Meatballs' can be accepted by the consumers.

#### c. Taste

Taste is one of the part to evaluate a food that involve the sense of taste. The taste of a food product has its own role, this is because of the high demand level if the taste can be accepted by the consumers. The panelists evaluation result for the taste can be seen on Figure 5.

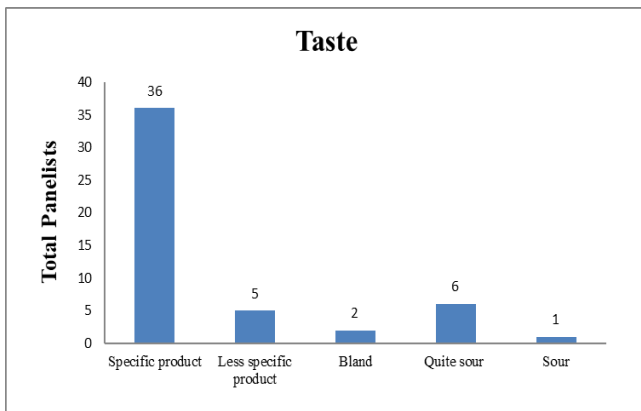


Figure 5. The panelists evaluation result for organoleptic test of taste

From the Figure 5. Showed that ‘Pucuk Meatballs has the high value from the result of panelists evaluation. There were 36 panelists gave their marks to the specific product taste criteria. The panelists evaluation was spreading to the other criteria, there were 5 panelists evaluated that the product taste was less specific, 2 panelists evaluated that the product’s taste was bland, 6 panelists evaluated that the product’s taste is quite sour, and 1 panelist evaluated the taste of product is sour. Based on this result, can be said that the taste of fish meatballs with Caisim as the natural dye can be accepted to the consumers.

**d. Texture**

Texture is one of a product characteristic or the material that can be felt and seen by a touch of the skin. The result of organoleptic test for the texture of ‘Pucuk Meatballs’ by the panelists can see on Figure 6.

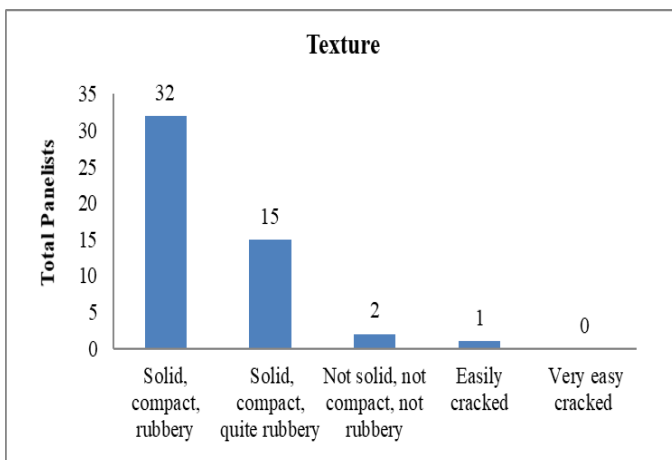


Figure 6. The panelists evaluation result for organoleptic test of texture

Based on Figure 6. can see that there were 32 panelists gave their evaluation that ‘Pucuk Meatballs’ has the solid, compact, rubbery texture. The criteria with solid, compact, and quite rubbery was evaluated by 15 panelists, 2 panelists evaluated that the product was not solid, not compact, and not rubbery, and there was 1 panelist evaluated that the product was easily cracked. The dominant evaluation for the product’s texture showed that ‘Pucuk Meatballs’ can be accepted to the consumers.

**3.3. Discussion**

The diversification of tuna meatballs with natural dye Caisim jas produced a green meatballs product. The green meatballs then got named with ‘Pucuk Meatballs’ then through the well process that right to be consumed. This meatballs production used tapioca flour as the adhesive material and to enhance the rubberiness. Besides that, the making of meatballs can use the sago palm flour. However, it could made the dull color of the fish meatballs and affected to the appearance. Novitasari and Mardesci (2020) said that the used of sago palm flour can influence to the color, the more used of sago palm flour then the color will be more grayish.

The test of appearance or color, smell, taste, and texture was to characterize the product from the result of diversification. These four criteria got high remarks from panelists. As the product’s appearance got the high evaluation, then it is matched to Winarno (2004) said that to determine the quality of the comestible in generally is depending to the color, because it is the thing that appeared first of all. Based on the panelists evaluation result that also on SNI 01-7266-2014 with average score was 7 for the product’s appearance.

The smell from product ‘Pucuk Meatballs’ was put into specific product category, which mean the Tuna meatballs with Caisim as the natural dye has giving a specific smell/fragrance. Winarno (2004) has pointed out that the smell is an odor that come from a chemical reaction that smelled by the olfactory nerves inside the nasal cavity when the food come into mouth. The addition of natural dye given an influence to the smell, but did not make the fish meatballs specific smell dissappeared. In the other hand to the organoleptic test from Assyariah et al, (2020), said that the Tuna meatballs with Moringa leaves have the smell of it.

The taste of 'Pucuk Meatballs' was liked by the consumers. This can be seen from the dominant good evaluation from panelists. The organoleptic test of fish meatballs with Caisim as the natural dye has fulfilled the standard of SNI 01-7266-2014 with the average score was 7. The texture of this product also got enjoyed by the consumers which is in this case was the 50 panelists that become the object of this research. Andayani et al, (2014), pointed that the good food texture is still fresh, not flabby, and phlegm. Same thing with taste, the texture of product 'Pucuk Meatballs' has fulfilled the Indonesia National Standard with the average score was 7.

## 4. Conclusion

The conclusion from this research is the diversification of Tuna meatballs with Caisim (*Brassica juncea* L) for natural dye has successfully made and named 'Pucuk Meatballs'. The product's characteristics of 'Pucuk Meatballs' with organoleptic test which is smooth surface of the product's appearance, not bladdery, and bright; specific product's smell; specific product's taste; also the solid compact and rubbery texture.

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## References

- [1] Wibowo S, 1995. Pembuatan Bakso Ikan & Bakso Daging. Penerbit Penebar Swadaya
- [2] Suprapti, 2003. Teknologi Pengolahan Pangan. Kanisius. Yoguakarta.
- [3] [BPS] Badan Pusat Statistik Kabupaten Pulau Morotai. 2022. Kabupaten Pulau Morotai Dalam Angka. Katalog BPS: ISBN 2503-1317.
- [4] Sofiati T.2016. Analisis Komoditas Unggulan Perikanan tangkap di Kabupaten Pulau Morotai. Unipas Press. 1(1): 1-9
- [5] Saparinto, D. F., & Hidayati, D. 2006. Bahan Tambahan Pangan. Yogyakarta: Kanisius.
- [6] Marginingsih, R.S., Nugroho, A. S., & Dzakiy, M. A. 2018. Pengaruh Substitusi Pupuk Organik Cair pada Nutrisi AB MIX terhadap pertumbuhan Caisim (*Brassica juncea* L) pada Hidroponik Drip Irrigation System. Jurnal Biologi & Pembelajarannya. 5(1): 44-51.
- [7] Suharyanto, Soetrisno. E., & Yurike. 2021. Pembuatan Bakso Sehan dengan Penambahan Buah Naga Merah bagi Masyarakat di Desa SrikATON, Kecamatan Pondok Kelapa, Bengkulu Tengah. Indonesia Journal of Community wmpowerment and Service. 1(1):35-40.
- [8] Cahyaningati, O., & Sulistiyati, T. D. 2019. Pengaruh Penambahan Daun Kelor (*Moringa oleifera* Lamk) terhadap Kadar  $\beta$ -Karoten dan Organoleptik Bakso Ikan Patin (*Pangasius pangasius*)
- [9] Renate, D., & Nurlismita, E. 2015. Penambahan Ekstrak Wortel pada Bakso Ikan Gabus terhadap Kadar  $\beta$ -Karoten dan Organoleptiknya. Prosiding Seminar Agroindustri dan Lokakarya nasional FKPT-TPI Program Studi TIP-UTM. A-11-A-17.
- [10] Betty, D. S., & Tjutju, S. A. 2011. Bahan Ajar penilaian Indera. Sumedang: Jurusan Teknologi Pangan Fakultas teknologi IndustriPertanian. Universitas Padjadjaran.
- [11] Novitasari, R. & Mardesci, H. 2020. Pembuatan Bakso Ikan Gabus dengan Pemanfaatan Tepung Sagu yang Merupakan Potensi Lokal Sumberdaya Alam kabupaten Indragiri Hilir. Jurnal Teknologi Pertanian. 9(2); 71-78.
- [12] Winarno, F. G. 2004. Kimia Pangan dan Gizi. Gramedia Pustaka Utama. Jakarta. SNI 01-7266. 2014
- [13] Assyariah, T. S., Putri, L. A. R., & Ananda, S. H. (2020). Kandungan Protein Dan Uji Organoleptik Bakso Ikan Tuna Dengan Penambahan Daun Kelor Di Wilayah Kerja Puskesmas Kulisusu Kabupaten Buton Utara. Jurnal Ilmiah Karya Kesehatan, 1(1), 54-60.
- [14] Andayani, T., Yusuf, H., dan Rini, Y., 2014. Minyak Astiri Daun Sirih Merah (*Piper crocatum*) Sebagai Pengawet Alami Pada Ikan Teri(*Steplophorus indicus*). Jurnal Bioproses Komoditas Tropis, 2(2), 123-130.