

The Creation of Barracuda Fish Based Meatball as Nutritious Food

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Abstract

Food product as the result of culinary product recently has already been done by culinary lovers to cultivate and utilize various ingredients either as basic ingredient or substitutional ingredient, either from plant food source or animal. To face the free market globalization, ASEAN Economy Community, business in culinary field also needs to be concerned by training the sellers of healthy food including meatball. This matter will really help the government to increase the quality life of its inhabitants. By creating healthy food product design, it will increase the variety of food type which is available in this country. Meatball which is familiar for Indonesian community as snack can be got easily to be consumed as cheap and fun snack. However, most of the meatball which is sold nowadays is still unhealthy. Healthy meatball as optional choice for meatball culinary lovers who concern with the healthiness, nutrition, and safety to be consumed.

Keywords: meatball, food, healthy, nutritious

1. Introduction

Business competition in culinary field is more competitive and business environment which is dynamic and unstable forces the culinary businessmen to find new breakthrough and implement strategy which is in accordance with the development and change of culinary business environment. Culinary business competition will also affect free market economy in globalization era, ASEAN Economy Community. One of the potential things in Indonesia is the country which has many various food products either healthy or unhealthy which haven't met healthy needs for community who consume.

Meatball as snack food which is sold a lot can be got easily to be consumed by culinary lovers in all parts of Indonesia. There are many types of meatball which are sold recently with many different types of basic meatball ingredient which are used and additional ingredient together with spices so that can be determined the delicious taste and cheap price until expensive price in one portion of meatball to attract the intention of meatball culinary lovers.

A lot of food products grow in Indonesia either growing in land or sea, either growing in fresh water, brackish water or sea water. This is a promising potential. In accordance with the increasing of inhabitants, the need of food product as energy source is also increasing. By having a lot of food products which are available in Indonesia, there is also a lot of opportunity of culinary business to make innovative food creation in order to increase the number of variety of food product result by using local basic ingredients which are available around us. Therefore, there are still a lot of food product designs which are needed to produce new food types, healthy which can be accepted by community in Indonesia especially culinary lovers who always follow the trend of food. Based on that thing, the reseracher wants to contribute by making meatball creation from "barakuda" fish as nutrituous food.

Meatball is the kind of food from China. The original word of meatball is "bak – so" in Hokkien dialect means minced pork. Since most of the inhabitants in Indonesia are Moslem, the community does a change or modify the original model of meatball by making the meatball from minced beef, chicken, or fish which is mixed with flour. Meatball can be modified to be more various menu by adding or mixing with fish, cheese, toufu, tomato, pineapple, prawn, carrot and others (Aryani dkk., 2013). Whereas creation and innovation cannot be separated from their existence in kitchen activity.

Creation tends to the usage of beauty food art and new recipe, whereas innovation refers wider because it is not only limited on recipe but also all kinds of modification and discovery which are done to make the kitchen duties perfect. Innovation has to be focused on modification and discovery. For example, how to find the cheap food ingredients, then produced to be expensive food (Bartono and Ruffino, 2005).

Fish is respected and good in fresh and dry shape. Fish contains high animal protein source. The nutrituous content value is more or less the same as meat, only a little bit less in iron, B1 and B2 vitamin. Whereas small fish which is eaten together with its bone contains a lot of calcium (Minantyo, 2011). Fish is said fresh if that fish has the same body condition as live fish in which the physical change, chemical and biological that occur haven't caused the worst damage towards the fish. The level of fish freshness is really important because it can affect the appearance, smell, taste, texture, and consumers' favourite (Liawati and Afrianto, 2010).

Table 1. Nutritional Content of Barracuda Fish (in 100 gram)

No.	Nutritional Content	Amount	No.	Nutritional Content	Amount
1	Water	75.5g	12	Potassium	390mg
2	Energy	100cal	13	Copper	0.7mg
3	Protein	14.7g	14	Zinc	0.8mg
4	Fat	2.4g	15	Retinol	-
5	Carbohydrate	4.9g	16	B. Carotene	-
6	Fiber	-	17	Total Carotene	-
7	Ash	1.6g	18	Thiamine	-
8	Calcium	90g	19	Riboflavin	-
9	Phosphor	90mg	20	Niacin	-
10	Iron	0.4mg	21	Vitamin C	-
11	Sodium	390			

Source : Indonesian Food Composition, 2009

Protein is the biggest component in human's body after water. The amount is 1/16 from the weight of human's body, and spread in muscle, bone, skin and other body liquid. Protein is needed by body as builder substance, controller, and fuel. As builder substance, protein is new fibre forming material in the body. As controller substance, protein plays a role to control any system in the body. As fuel, protein will be burnt when body energy need can't be fulfilled by carbohydrate and fat. Protein need can be fulfilled from two food stuff sources, that is, animal and plant protein. The best source of animal protein is mammal meat, fowl and sea fish. Whereas the best plant protein can be got from the type of food from nut source. Protein is needed for growing and fixing damaged cells. More or less 20% from the food that is consumed has to be in protein form (Junaidi, 2010).

Fat is a kind of substance which is rich in energy, functions as the main energy source for body metabolism process. Fat which is spread in the body is got from two sources that is from food and production result of liver organ which can be kept inside the fat cells as energy spare. The function of fat is energy source, body organ protector, cell forming, the source of essential fatty acid, conveyance fat soluble vitamin, and save protein, give satiety and delicacy, as lubricant, and maintain body temperature.

Carbohydrate is the main calorie source for human. Although the amount of calorie which is resulted only 4 cal from 1 gram carbohydrate, but if compared to protein and fat, carbohydrate is the source calorie which can be got easily. Besides, some calorie groups contain fiber which is useful for digestion. Carbohydrate is the energy source for all individuals. Carbohydrate can be got easily and almost all food products contain carbohydrate. The function of carbohydrate for body is to produce energy, spare power for body, and give satiety.

The function of sodium for body (Astawan, 2009) is to absorb glucose in kidney and colon, also to transport other nutritious substances through cell membrane. One of its essential role is that to maintain osmotic balance or the balance of liquid flow in the body. Furthermore, it also stimulates the nerve and help cells for metabolism of other essential nutritious substances. Together with calcium, sodium also functions to maintain the function and working of heart muscle, also to avoid dangerous diseases like neurological disorder. For pregnant women, sodium functions to increase the heart working to pump the blood in order to fulfill the mother and her fetus.

Calcium is very important for growing (Astawan, 2009). Enough calcium is 600 mg / day for children, 1000 mg / day for teenagers and 800 mg / day for adult. Calcium can reduce the risk of getting some types of cancer such as colon cancer, breast cancer, cervix cancer. Around 99 percent calcium in the body is concentrated on the bone and teeth, whereas the other one percent is spread into the blood and blood circulation. Calcium is very important to avoid osteoporosis, alimentary canal cancer, hypertension and pathogen. It does not only form bone framework and strong teeth but also it is useful for muscle function, hormone regulation and enzyme activation.

The main function of phosphor is to give energy and power for fat and starch metabolism as to support healthy teeth and gum, DNA synthesis, also the absorption and use of calcium. The content of phosphor in food is found a lot in high protein food, such as fish, chicken, meat, egg, nuts, seeds, and cereal or grain. The content of phosphor is also found a lot in the processed food like processed meat, bread, oatmeal or food material in which the main food material contains phosphor as mentioned above. The need of phosphor for children is useful to support their development in times of growth.

Iron substance plays an important role in human body. One of the main functions is the main transportation in distributing oxygen to the whole body. Moreover, iron substance also plays in producing hemoglobine and supporting body immune system. Therefore, if lack of iron substance, the risk of getting disease is high.

Calcium is known useful to control blood pressure, but high blood pressure cleans carbon dioxide in

blood, to trigger the working of muscle nerve and synapse, to expedite oxygen sending to the brain and to help the balance of liquid body (Astawan, 2009).

Vitamin is complex organic substances which are needed in the small amount and in general can't be formed by body. Therefore, it has to be added from food. Vitamin belongs to the growing controller substance group in maintaining life. Every vitamin has its specific duty in the body because vitamin is organic substance so the vitamin can be damaged because of storing and processing (Almatsier, 2009).

Criteria of good fish meatball can be seen from the meatball quality requirement which is stated in SNI 017266.1-2006 is that:

1. Shape: soft round, same size, clean and bright, not dull.
2. Color: white color evenly without other strange colors
3. Taste: delicious, tasty, the fish taste is dominant appropriate with the type of fish which is used.
4. Aroma: the outstanding smell of boiled fresh fish is dominant appropriate with the type of fish which is used and the smell of spices is quite sharp.
5. Texture: compact, elastic, no clay or bouny, no meat fiber, boneless or bone, not mushy, not wet watery, and not fragile.

According to Indonesian dictionary, product design is one of the activities which designs the shape then is processed through production process and the final result to be one stuff / product which is resulted from that production process also the value and its function can fulfill the consumers' desire which is customized with the era development and changing time. Product design is a profession in which the activity is related to one of the innovative processes.

Table 2. Material and cutleries which are needed to make barracuda fish meatball

No.	Ingredients	No.	Tools
1	Barracuda fish	1	Food Procesor
2	Tapioca	2	Cutting Board
3	Egg	3	Knife
4	Lemon juice	4	Basin
5	Garlic	5	Wooden spatula
6	Ginger	6	Table spoon
7	Pepper powder	7	Scale
8	Salt	8	Ladle
9	Granulated sugar	9	Pan
10	Green cabbage leaf	10	Bowl
11	Ice cube		
12	Frying oil		

Source : Processed Data 2015

The making process of barracuda fish meatball:

1. Prepare the material and cutleries which are needed.
2. Soften the fish, tapioca and spices with food procesor.
3. Put in the egg one by one until the dough mixed.
4. Add the ice cube little by little (if needed).
5. The dough shape of meatball based on the taste.
6. Boil until it is cooked.
7. Lift it and ready to be served.

2. Research Method

This research type is experiment research, this experiment research method is done at Ciputra University laboratory. To get the research result which can meet the expected research purpose, therefore it needs to do the research steps, that is, data type, data source and research analysis method which are needed:

Table 3. Type and source of getting data

No.	Data Type	Data Source
1	Literature Source	<ul style="list-style-type: none"> • Book • Journal
2	Data produk	<ul style="list-style-type: none"> • Various meatball • Picture/ meatball
3	Justification	<ul style="list-style-type: none"> • Food Expert
4	Meatball Snack Fans/Meatball Snack Seller	<ul style="list-style-type: none"> • Meatball Fans • Meatball Seller • Meayball Product Seller
5	Product prototype	<ul style="list-style-type: none"> • Bubara Fish Meatball Product
6	Nutritious Substance Content in Meatball Snack	<ul style="list-style-type: none"> • Data Result from food standardization Laboratory in Surabaya

Source : Processed Result 2015

Table 4. Analysis Method which is used

No.	Activity	Analysis Method
1	Introduction Study about meatball snack	Literature Study
2	Interview, look for meatball product data which is sold and used by food processor	Interview data result, field survey data result (market, supermarket), meatball seller, meatball fans, sellers who use meatball
3	Justification food expert	Data Result
4	Make sample/meatball snack product sample	Practical result of making meatball from basic ingredient of barracuda fish, supplementary material and spices.
5	Test the content of meatball nutritius meatball	Data Result of meatball laboratory test at standardization laboratory on jalan Jagir Surabaya

Source : Processed Result 2015

3. Result and Discussion

Based on the result survey about many various types of meatball which are available at the market, it is found various price in which the lowest price per kg is 57.000,00 IDR and the highest price is 200.000,00 IDR. Net weight is also various, the lowest net weight for vacuum packaging is 150 gram and the highest net weight is 720 gram.

Meanwhile, in main material composition of making various meatball starting from beef, chicken, pork, fish, prawn, tapioca flour, cornstarch, the modified whiteegg/egg. Variations of other additional materials such as mushroom, celery, carrot, paprica, seaweed, smoked fish, stabilizer, preservative, and dye. The use of flavoring, most of the spices of making meatball is monosodium glutamate flavor enhancer, salt, sugar, pepper and garlic, frying oil, sesame oil.

3.1 Market Acceptance towards meatball

Based on the interview result that the researcher does towards meatball fans, it is seen from the way they buy, some of them buy branded meatball, some of them also like to buy from meatball stalls, but most of them prefer making by themselves. From meatball basic ingredients, some of them like beef, fish, chicken and little mixture. Based on the texture, some of them like meatball with rough texture, some of them like soft texture. Whereas from healthiness, meatball fans prefer healthy one without preservative and MSG. Whereas towards creation, there is healthy meatball which is related to the researcher done, they really agree but has to be attached with the first product trial. Based on the interview result with the sellers who use meatball product, they buy beef meatball which is sent from the supplier so the selling price of the food becomes expensive. For healthy meatball, according to them is that the meatball without preservative, formalin or springy.

Based on the interview result of meatball seller, it is seen from the making process, some of them make by themselves everyday with beef basic ingredient by mixture and spices of royco flavoring. Some of them make in a lot of quantity directly and be kept for a few days. Some of them are made by others, some of them order the meatball through supplier. According to those meatball sellers, the healthy meatball is a lot of meat with liitle flour mixture and without using preservative and springy. Whereas relating to the research in which the reseracher has done, the sellers are really happy and attractive to participate if there is a training to make healthy meatball.

3.2 Nutrituous content of barracuda meatball and spinach meatball

Laboratory test result about the meatball that the researcher has done to make barakuda fish meatball without preservative, flavoring spice (MSG) is as follow:

Table 5. Nutrituous Content of barracuda meatball and spinach meatball.

Parameter	Unit	Test Result of barracuda meatball	Test Result of spinach meatball	Test Method
Ash Content	%	1.17	1.43	Gravimetric
Phosphor	%	0.13	0.12	Gravimetric
Iron (Fe)	%	5.52	9.3	Calorimetric
Protein	%	16.44	13.4	Kjeldahl
Iodine	mg/kg	Negative	Negative	Titrimetric
Carbohydrate	%	22.30	19.41	Luff schrool
Fat	%	1.83	1.6	Welbull
Calcium (Ca)	mg/kg	50.09	115.3	AAS
Sodium	%	0.70	2.2	AAS
Calorie	Cal/100g	171.43	145.88	Calculation

Source : Research Center and Surabaya Industrial Standardization, 2015

Based on the result test report, for barracuda meatball, the nutrituous content is Iron 5.52%, Protein 16.44%, Carbohydrate 22.30%, Fat 1.83%, Calcium 50.09mg/kg, Sodium 0.70% and Calorie 171.143cal/100g. Whereas based on the test result report, for spinach meatball (barracuda which is mixed with spinach leaf) the nutrituous content is Iron 9.3%, Protein 13.4%, Carbohydrate 19.41%, Fat 1.6%, Calcium 115.3mg/kg, Sodium 2.2% and Calorie 145.88Kkal/100g. From those two types of meatball, they contain high calcium so it is suitable to be suggested for children, teenagers or adult. According to Made Astawan (2009), calcium is very important for growing. Enough calcium is 600 mg / day for children, 1000 mg / day for teenagers and 800 mg / day for adult. Calcium can reduce the risk of getting some types of cancer such as colon cancer, breast cancer, servic cancer. Around 99 percent calcium in the body, it is concentrated on the bone and teeth, whereas the other one percent is spread into the blood and blood circulation. Calcium is very important to avoid osteoprosis, alimentary canal cancer, hypertension and patoghen. It does not only form bone framework and strong teeth but also useful for muscle function, hormone regulation and enzyme activation. Besides, it also contains a lot of iron substance. Iron substance plays an important role for human body. One of the main functions is that main transportation in distributing oxygen to the whole body. Moreover, iron substance also plays in producing hemoglobine and supporting body immune system. Therefore, if lack of iron substance, the risk of getting disease is high. In these two types of meatball, the protein content is also quite high. Protein is the biggest component in human's body after water. The amount is 1/16 from the weight of human's body, and spread in muscle, bone, skin and other body liquid. Protein is needed by body as builder substance, controller, and fuel. As builder substance, protein is new fibre forming material in the body.

4. Conclusion

Based on the result survey about the various types of meatball which are availbale at the market are found various price. Net weight is also various, the lowest net weight for vacuum packaging is 150 gram and the highest net weight is 720 gram.

The main material composition of making various meatball is starting from beef, chicken, pork, fish, prawn, tapioca flour, cornstarch, the modified egg white/egg.

The variations of other additional materials are like mushroom, celery, carrot, paprica, seaweed, smoked fish, stabilizer, preservative, and dye.

The use of flavoring, most of the spices of making meatball are monosodium glutamate flavor enhancer, salt, sugar, pepper and garlic, frying oil, sesame oil.

The test result of barracuda meatball nutrituous content is Iron 5.52%, Protein 16.44%, Carbohydrate 22.30%, Fat 1.83%, Calcium 50.09mg/kg, Sodium 0.70% and Calorie 171.143cal/100g.

The test result of spinach meatball (barracuda which is mixed with spinach leaf) the nutrituous content is Iron 9.3%, Protein 13.4%, Carbohydrate 19.41%, Fat 1.6%, Calcium 115.3mg/kg, Sodium 2.2% and Calorie 145.88cal/100g. From these two types of meatball, the calcioum content is quiet high so it is suitable to be suggested for children, teenagers or adult.

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