INNSPUB

International Journal of Agronomy and Agricultural Research (IJAAR)
ISSN: 2223-7054 (Print) 2225-3610 (Online)
http://www.innspub.net
Vol. 15, No. 4, p. 42-46, 2019

RESEARCH PAPER OPEN ACCESS

Processing, composition and sensory properties of chicken breast meat crisps substituted with chicken feet bone crisps as a functional food

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Article published on October 30, 2019

Key words: Chicken floss, Chicken feet bone substitute, Functional food, Chicken meat

Abstract

The research aims to know the potential content of the nutritional value of chicken shank bone and To know the tasty level of chicken floss that has been substituted with chicken feet bone. The research was conducted with the experimental method. The treatment applied to the organoleptic test is the different composition of chicken meat and chicken bone as chicken floss ingredient. Organoleptic test conducted on taste, aroma, color, and texture assessed by a panel of 20 people. Panelist assessment results were analyzed by Honestly Significant Difference Test. The Results of treatment were tested in the laboratory to determine the nutritional content. The test results will be discussed through descriptive analysis. Results of the study: 1) The content of the nutritional value of chicken bone claws mostly are protein 89.64% and fat 22.79%. 2) the formula of 90% cf and 10% cbf is the most preferred one.

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Introduction

One of waste *(by-product)* generated from chicken slaughterhouse (RPA) is a chicken feet with quite a lot of volume. 2003 agricultural statistical data reported by Suryana (2004) showed that the production of chicken meat as much as 973.000 tons (973 million kg). When the chicken is cut weight ranges from 1.5kg, the number of chickens that was cut during the year 2003 is 648 666 667 (973 000 000: 1,5) tail and the number of pieces produced chicken feet pieces 1297333333 (Simatupang and Hadi, 2003). During this time, its potential has not been optimally tapped. Chicken feet has a girth of at least 4 cm and a length of 13 cm. Chicken feet *(Sank)* is a part of the chicken's body less desirable, which consists of a component of skin, bone, muscle and collagen so it needs to be given a touch of technology to be processed into value-added products. During this time, new chicken feet used as a mixture of soup, spicy chicken feet and crackers (Brown *et al.*, 1997).

The idea is starting from the abundance of bone waste from the manufacturer of rambak. Rambak is kind of crackers made from skin part of chicken feet. Bone waste is a side product which is need an effort to get another economic value. Furthermore there is an utilization of fish boneas ingredient of fish floss that is proved could prevent osteoporosis (Chen *et al.*, 1991). Chicken bone has a very high calcium content and good for bone growth. So it can increase revenue because the market demand is very high since preferably citizen and begin reaching the market in several cities in East Java. The making is very simple and easy to do.

According to the nutrition expert of Semen Gresik Hospital, Dr. Meta Ayu, bones of the milk fish contains 753 milligrams of calcium, 345 Milligram phosphorus, protein and 90.1 milligram fat. With a fairly high calcium content, tasteful appeal, not least with milkfish meat. In fact, the stench of fish, completely lost in this thorn floss. As well as hen's bone feet, its pelt is likely the same as the thorns of milkfish containing high calcium can be used as a health food (Jahari and Sri, 2007).

In general, functional food *(food* function) is defined as nutritious food in addition to also have a positive effect on people's health, since in these foods contained components or specific substances that have a physiological activity which is very good for health. One is protection osteoporosis that has been applied not quite optimal due to smoking, consumption of coffee, soft drinks, and alcoholic beverages difficult to remove (Mustakim, 1999). Consciousness of most people the importance of exercise to prevent osteoporosis is still lacking. In addition, most people also lack vitamin D intake is usually obtained from direct sunlight in the morning (Sumanto *et al.*, 2018).

Calcium is an imperative to build and maintain strong bones, but calcium alone is not enough to prevent bone loss because the body will steal calcium reserves needed bone. In addition, calcium strengthens bones only the outside only. Meanwhile, the important part is the inside of the bone that will determine the strength of the outer bone that is formed by a substance called Hydroxyapatite (Simmen *et al.*, 2004). One of the foods that contain lots of *Hydroxyapatite* is a chicken leg or a person is often called chicken claw. In addition to containing Hydroxyapatite chicken claw also contains collagen, amino acids, calcium, protein collagen, and a number of other minerals (Simmen *et al.*, 2004).

Chicken collagen (present in bone chicken claw) is a foreign antigen that is immunogenic. The collagen has several parts (fractions) protein that plays a role similar to the Ag collagen protein fraction of human joints. With collagen eat chicken every day, slowly and regularly body introduced with the chicken collagen fraction Ag protein has antigenicity and immunogenicity, as well as the structure and molecular weight of Ag collagen similar to human joints so that arose tolerance to self-Ag contained in the human body. In the end, the collagen that makes bones become elastic and not easily broken (Sarkar, 1995). From the description above, theidea to cultivate bone chicken claw as useful food while utilizing the claw bone chicken as food has functions such as for food that has health function, in other food words.

Materials and methods

Research conducted at the Laboratory of Animal Product Processing Technology STPP Malang, held in September to October 2013. While the resulting shredded quality testing conducted at the Laboratory of Food Science Brawijaya University.

Material Research

Tools and materials:

1. Oven, pans, stove, grinder, mixer, pressure cooker, oven, knives, basins, winnowing and blenders.
2. chicken feet bone, spices (onion, and white, brown sugar, bay leaves, galangal, salt), and cooking oil.
3. chicken:

The procedures for making:

1. boiled chicken feet Bone for 15 minutes and drain to make it soft
2. Dried under the sun
3. Bone destruction process is done with in a blender or soft ground to pieces after it was prepared spices and mashed.
4. Chicken feet bone that has been destroyed marinated in herbs for 30 minutes, then fried.
5. The floss ripe then drained and pressed until oil runs out and dry out.
6. Shredded chicken feet bone ready to be served and ready to be tested to the laboratory and organoleptic tests.

Treatment

Research carried out by the experimental method. The treatment is applied to the organoleptic test are:

1. P1: 100% chicken floss (cf).
2. P2: 100% chicken feet bone floss (cbf).
3. P3: 90% cf + 10% cbf
4. P4: 80% cf + 20% cbf
5. P5: 70% cf + 30% cbf
6. P6: 60% cf+ 40% cbf
7. P7: 50% cf + 50% cbf

Appearance Test

Test Consumer passions

Testing organoleptic ally by 20 panelists who are experienced, with presents a table to be filled by the panelists were as follows:

Scoring:

1 = very like
2 = like
3 = Fair
4 = dislike
5 = strongly dislike

As neutralizer flavor using fresh bread. The next panelist assessment results were analyzed using analysis of variance (ANOVA), if there are real differences in consumer preferences will be continued by Honestly Significant Difference Test.

Nutrient Content Test

Shredded chicken bone treatment results were further tested in the laboratory to determine nutrient content, such as proteins, fats, minerals and collagen. The test results be discussed through descriptive analysis.

Results and discussion

Processing Method Shredded Chicken Claw Bone

There are several ways of processing shredded chicken feet bone that is by frying using cooking oil and used cooking oil. Apparently the results of several experiments that have been done of the above-mentioned two ways that best results are good flavor and texture produced is a way to fry using cooking oil and some spices (Steel, 1980). As for how the processing of shredded bone chicken scratch is:

Tools: wok, panic, pestle and mortar, spatula, cutting boards, daggers, a small basin, clean cloth

Ingredients: Chicken feet bone 500 grams, red onion 1 kilogram (750 grams of garlic serve fried onions), garlic 400 grams, coriander powder 50 grams, 50 grams alangal, bay leaves 15 pieces, Lemongrass 7 pieces, sugar to taste, Tamarind 50 grams, 2000ml thick coconut milk.

Procedure:

1. chicken bones dried in the sun. Chicken bones crushed, pulverized to a powder.
2. Galangal and lemongrass is pounded to bruising. Onion, garlic, coriander finely ground, then pan-fried. After a rather fragrant, add coconut milk, galangal, tamarind, sugar, bay leaves and

lemongrass. Heating continues until boiling and coconut milk volume by half.

3. a.) Chicken bone that has been destroyed incorporated gradually into the boiling milk. Fire be diminished just keeping still boiling milk. Heating accompanied by stirring carried out until half-dry material. The results obtained so-called moist shredded.

b.) Shredded damp lifted, then fried in hot oil until crisp.

4. Abon newly appointed heat of the oil must be drained. Draining advisable to use centrifugal drainer tool, tool screw press or hydraulic press tool. Once drained, shredded segregated.
5. Abon the drained mixed with fried onions. The results obtained are called shredded chicken bones.
6. Shredded chicken bones packed in a sealed packaging such as plastic bags or jars.

Stages of Creation Shredded Chicken Feet Bone

1. chicken bones feet boiled
2. it dried.
3. ground into a powder.
4. All spices sauted in coconut milk.
5. Put chicken bone claws to mix coconut milk, spices.
6. Lift floss when it is moist.
7. Floss fried until crisp.
8. Drain and separate
9. Mix floss with fried onions.
10. Pack the floss.

Nutritional content of Shredded Chicken Feet Bone

The above table shows that the nutrient content of bone claws shredded chicken was excellent, especially protein (89.64%) of them are much higher with the content of shredded chicken according to (Apriyanto, 2003) amounting to 39.82%, so shredded chicken bone claws has been potential to improve the nutritional value or increase the nutritional value, especially for health.

Appearance passions Bone level Shredded Chicken Claw

Organoleptic At A level of taste, smell, color, and texture judged by an experienced panel of 20 people. There are several treatments that will be tested in Organoleptic are:

P1: 100% chicken floss (cf).
P2: 100% chicken feet bone floss (cfb).
P3: 90% cf + 10% cfb
P4: 80% cf + 20% cfb
P5: 70% cf + 30% cfb
P6: 60% cf+ 40% cfb
P7: 50% cf + 50% cfb

level of favorability organoleptic tests can be viewed at table 2.

Table 2 shows that the bone Abon (P2) preferably from the shredded chicken (P1) and a mixture of shredded chicken with shredded bone (P3-P7). In formula mixture of shredded chicken with shredded bones, it is known that the higher the percentage of bone shredded increasingly favored, and vice versa. This indicates that the level of consumer preferences towards bone shredded chicken claw highly preferred because it more tasteful presence of fat and collagen contained in the bone that crabbed and crispy texture feels soft granular bone chicken scratch.

Conclusion

Way of processing of shredded bone chicken scratch to go through stages that boiling the bones crabbed, drying bone chicken scratch, destroying bone chicken scratch into a powder, Preparing seasoning sauteed in coconut milk, inserting bone chicken scratch into a mixture of coconut milk, seasoning, shredded raised when already moist, shredded frying until crisp, drained, mixing shredded meat with fried onions and shredded packaging.

The content of the nutritional value of shredded chicken bone claws are: protein 89.64%, 22.79% fat, 0.04% water, ash 31.99%, KH 5.54%, 1.70% Ca, Mg 0.28% , 24.94% Fe, 1.26% P Total is very good for improving health. Preference level Abon bone scrawl as a substitute that Abon bone (P2: 90% shredded bone chicken scratch and 10% shredded chicken) is the most preferred of the shredded chicken (P1: 100% shredded chicken) and a mixture of shredded chicken with shredded bone (P3 -P7). In formula mixture of

shredded chicken with shredded bones, it is known that the higher the percentage of bone shredded increasingly favored.

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