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Test of preference level for catfish (*Pangasius pangasius*) nugget from central Kalimantan with different filler material

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KEYWORDS

Different filler materials, fish nuggets, organoleptic test

A B S T R A C T

Fish nuggets is one of diversified products made from ground fish meat with the addition of spices and formed, then covered with a coating (coating and breading), followed by frying. Basically the same fish nuggets with chicken nuggets only different in the raw materials used. Nugget processed products taste delicious, safe and meets the nutritional needs, so it is important to conduct this study in order to determine the quality of Nugget changes that occur during processing. This study was conducted to determine the characteristics of the organoleptic quality of catfish (*Pangasius pangasius*) Nuggets. Steps being taken in this study is three (3) stages: stage sample preparation, processing stage, and organoleptic test phase. From the research test preference level for catfish nuggets with different starch filler material at the same concentration (30%) significant effect on all parameters that best organoleptic test is the treatment of flour with an average value of appearance; 8,12, aroma; 8,04, taste; 7.90 and texture; 7.56.

Introduction

Fish product diversification efforts are needed to provide options for processing. Diversification processing of fishery products in the form of product formulation (diversification). Fishery products lately has been the concern and well developed. Fish processing aiming to increase value-added production, both derived from catching and aquaculture.

Another aim to recognize fishery products to the market and widely accepted by consumers (Fahrul, 2004). Processed fishery products are so prevalent in the market to meet the needs of protein for people. This is caused by modern life is too busy and time-consuming. Examples of ready-to-eat processed fishery products are otak-otak, fish balls, fish Nuggets, fish fingers, fish burgers and so on.

The refined product has a very high nutritional value and are needed by human body. One of processed products which are used by the middle class is Nugget (Burhan, 2004).

Fish nugget is one of the modern food, made from ground fish meat with the addition of spices and formed, then covered with a coating (coating and breading), followed by frying. Basically the same fish nuggets with chicken nuggets only difference lies in the raw materials used. Nugget processed products taste delicious, safe and meets the nutritional needs, so it is important to know the quality of the changes that occur during cooking (Mesra, 1994).

One effort in order Nugget accessible to all people by lowering production costs by modifying Nugget filler by replacing raw materials used in the manufacture of Nugget. In the process of making nuggets, excipients used are tapioca flour, cornstarch and flour. Lack of information about the quality nuggets of different fillers, the author is motivated to conduct research under the title Test of Preference Level for Catfish (*Pangasius pangasius*) Nugget from Central Kalimantan with Different Filler Material.

This study aims to determine the characteristics of the organoleptic quality catfish nuggets. While the benefits of this research is expected to provide scientific information about the quality of the resulting Nugget to the community especially Nugget processing products which use a different filler material.

Research Methodology

Materials used in this study were white meat catfish (*Pangasius pangasius*), tapioca flour, cornstarch, flour, onions, tasteing, salt, pepper, flake ice water, skim milk, egg whites and cooking oil to taste.

The tools used is stove, fryer, steamer appliance, analytical balance, trays, spoons, cutting boards, plastic heat resistant, stop watch, equipment to test the level of preference and stationery.

Research Procedure

The procedures in the manufacture of 100 g catfish nuggets that include raw material preparation stages as follows:

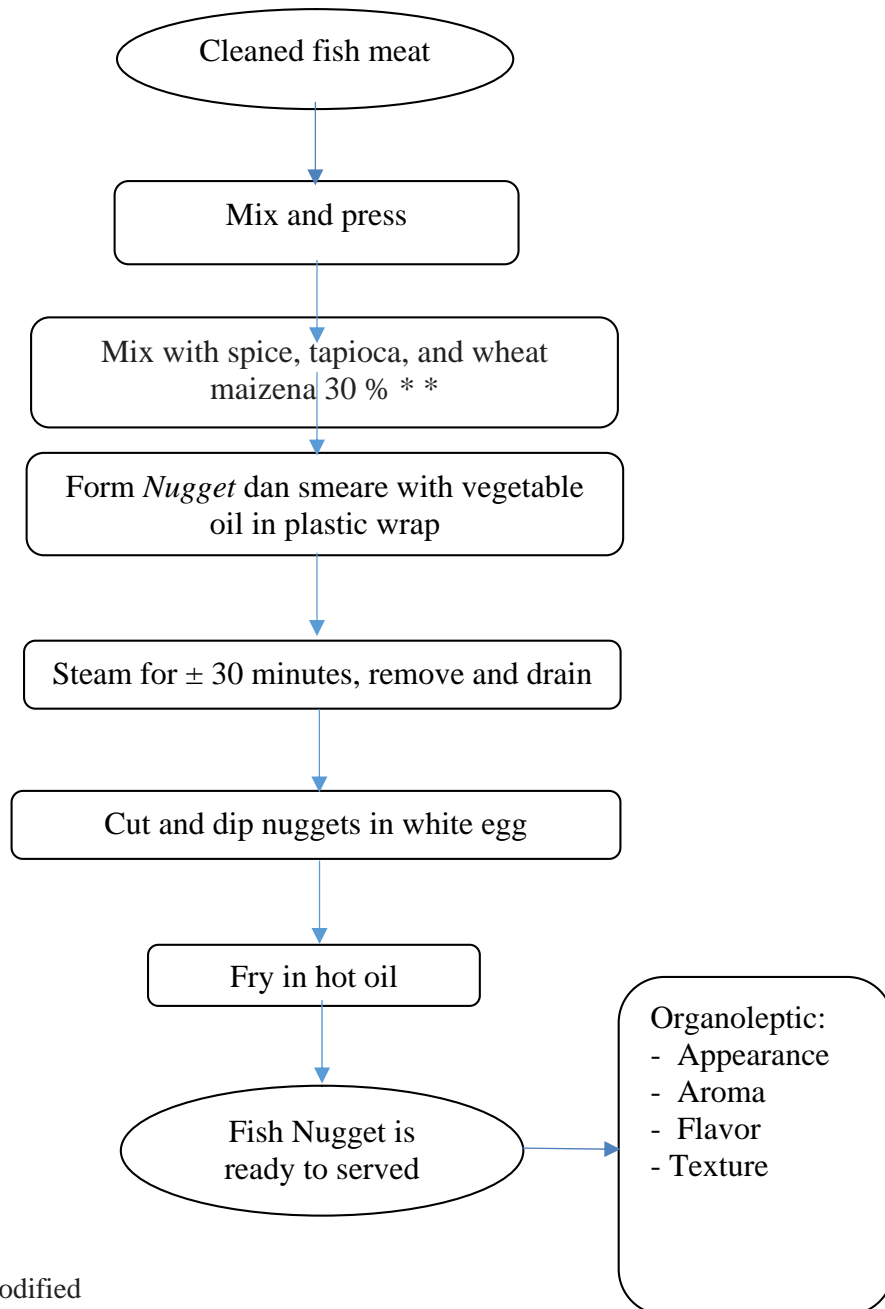
- a. Catfish meat cleared from bones and other unwanted parts.
- b. Meat fish washed clean and puree with a meat grinder.
- c. Washed again with water that has been cooled to a temperature of 5° C followed by pressing the flesh of fish.
- d. Mix the fish with herbs milled (250 g onion , salt 2 g , 5 g pepper, 240 g tasteing) which has been refined with the addition of filler material 30 % tapioca flour, maize flour 30 % and 30 %.
- e. Nugget printing is done by using the tools for making bread that is rectangular (basting with oil and plastic coated).
- f. Steaming for 30 minutes until cooked removed and drained .
- g. The cuts do next results dipped in egg whites.
- h. Then frying in conditions of hot oil.
- i. Nugget ready.

Organoleptic Test (Soekarto and Hubeis, 2000)

taste and texture. Tests on the appearance, aroma, taste and texture use of numbers 1-9. Tests conducted 25 untrained panelists.

In this study, organoleptic quality catfish nuggets observed were: appearance, aroma,

The process of making catfish nuggets in this study can be seen in Figure 1 below:



Remarks: * The modified

Figure 1: Flowchart of the process of making catfish nuggets
Source of Fish Nugget (Yuniardo, 1995)

Design of Experiments and Data Analysis

This study uses a completely randomized design (CRD) single factor with 3 levels / treatment i.e. 30 % tapioca flour, cornstarch 30 %, and 30 % wheat flour. Each treatment was repeated 3 times. Design formula is as follows (Sastrosupadi, 1994):

$$y_{ij} = \mu + \alpha_i + \sum U_j ; i = 1,2,3, \dots, t ; j = 1,2,3 \dots r$$

Wherein:

y_{ij} : Response to a trial - i , j-th repetition

μ : Mean general

α_i : Influence of treatment of types of fillers to - i
(= A: tapioca, B: cornstarch, C: flour)

$\sum U_j$: Error trial

Data from observation, will be processed using Variety Analysis. If the test impacts/real different, it will proceed with further test Duncan.

Result and Discussion

Organoleptic Characteristics of Catfish Nugget

Appearance is a way to evaluate the quality of food through the human senses, this method is used to assess the quality of the food is tested using one of the organs of the senses. This test can be conducted to determine the panelists' acceptance of a product produced (Soekarto and Hubeis, 2000) results catfish nuggets organoleptic test was conducted on the parameters, appearance, smell, taste and texture. Results

of organoleptic characteristics and form of catfish Nugget can be seen in the following:



Figure.1 Catfish Nugget

Appearance

The first characteristic that assessed consumers to consume a product is the appearance of the product is good or not, because of the nature of the commodity in the value of the quality of vision such as shape, size, and color (Soekarto, 1990).

Organoleptic test results appearance of catfish nuggets using a different type of filler material is presented in Figure 2.

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From Figure 2 above shows that the highest value was obtained in treatment C (wheat flour 30 %) with a value of 8.12 which means there is a hollow, white color of milk / chocolate, the lowest value was obtained in treatment B (cornstarch 30 %) with a value of 6.50 which means a little hollow, white color beige / brown, while the treatment of A (tapioca 30 %) obtained a value of 6.92, which means a little hollow white color beige / brown.

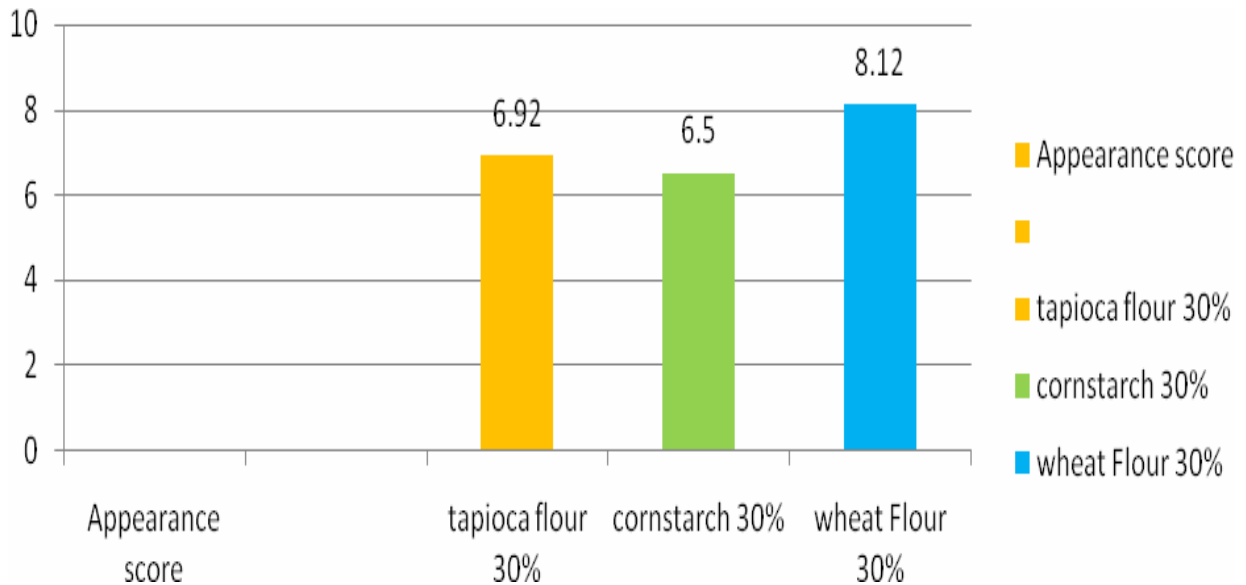
Results of analysis of variance showed that each treatment filler significant effect on the appearance of the catfish nuggets. Further Duncan test results indicate that treatment of

A (tapioca 30 %), significantly different with treatment B (cornstarch 30 %) and significantly different with treatment C (wheat flour 30 %). Based on Figure 2 shows that there was an increase in the concentration of 30 % to the specifications of white / beige suspected because of the filler material in the form of flour added to the manufacturing process of Nugget. Brown allegedly caused by the cooking process (frying) will be undertaken. This is in accordance with the opinion of de Man (1997) that the colors are obtained due to the browning reaction / Maillard reaction that

occurs namely milk reactants in the binder (filler) that is cornstarch.

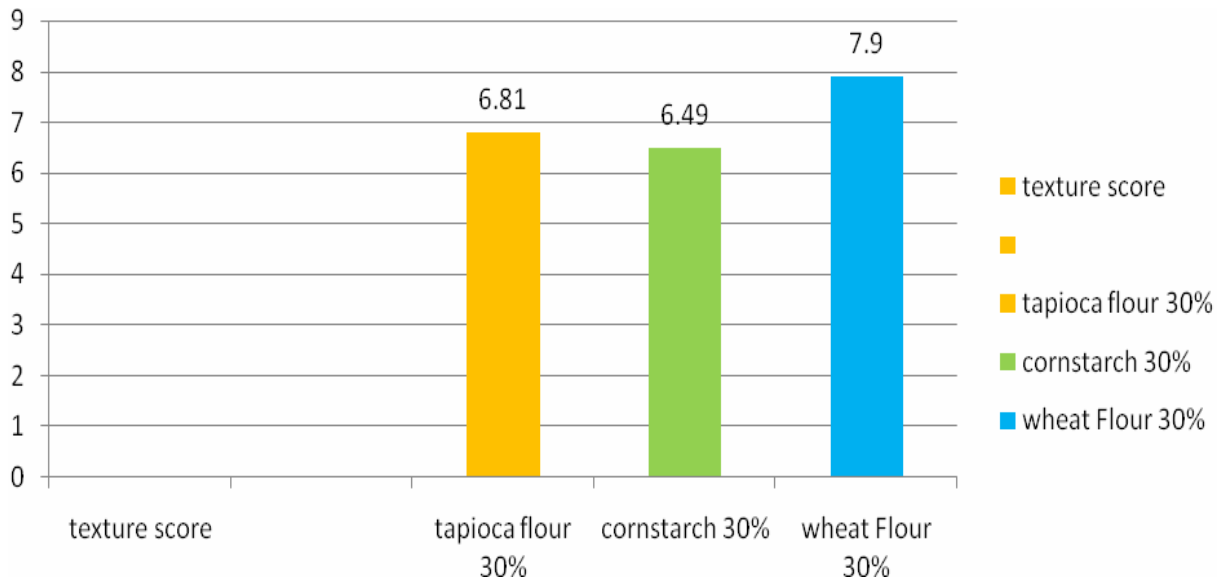
Aroma

One of the factors that determine the quality of a food may be accepted by consumers is the aroma. The smell of food determines the delicacy of the food (Winarno, 1991). Aroma is a compound that plays a role in peptitein, amino acid, hydrogen sulfate, methyl markeptin(spoilage). Organoleptic test results catfish nuggets aroma by using a different type of filler material is presented in Figure 3.



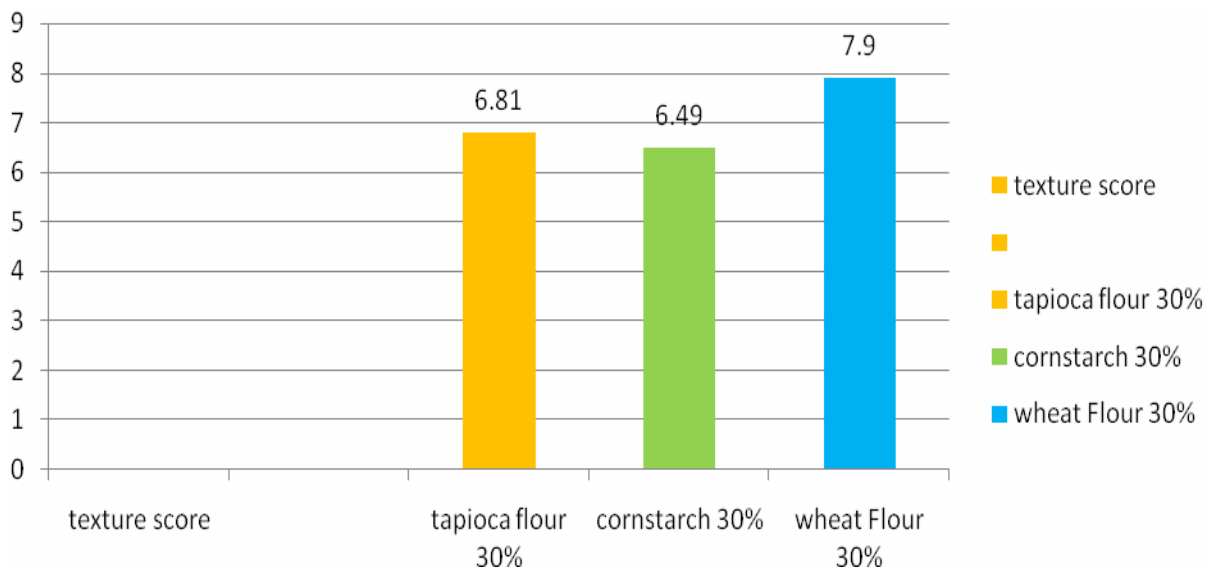
Description: The numbers on a bar chart followed by different superscripts letters (a, b, c) showed significantly different results on Duncan test on the real level of 95%

Figure.2 The Average Appearance Value of Catfish Nugget



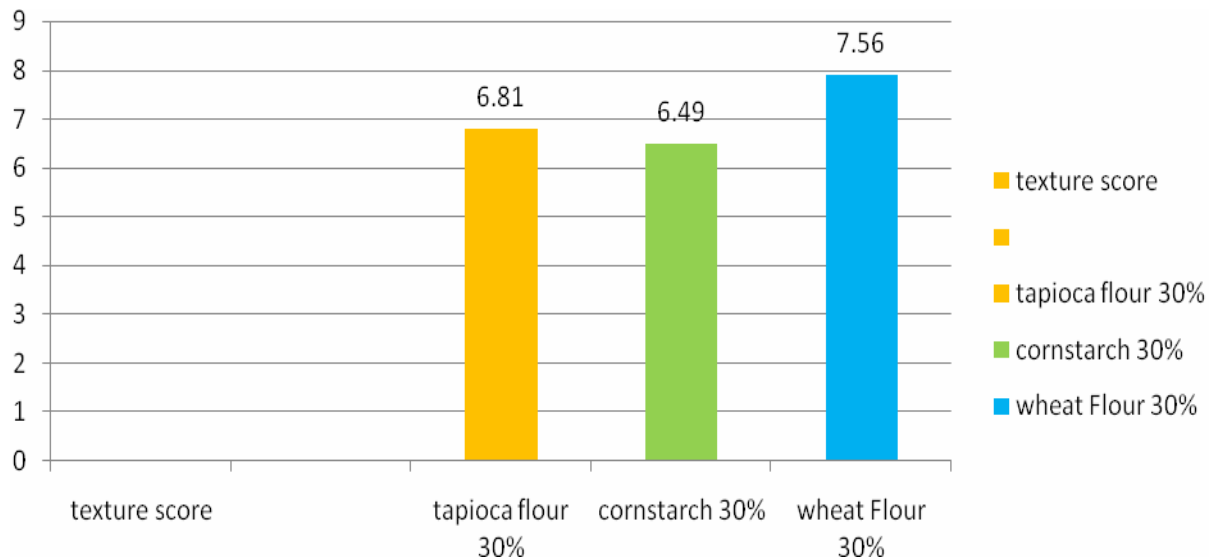
Description: The numbers on a bar chart followed by different superscripts letters (a, b, c) showed significantly different results on Duncan test on the real level of 95%

Figure.3 The Average Aroma Value of Catfish Nuggets



Description: The numbers on a bar chart followed by different superscripts letters (a, b, c) showed significantly different results on Duncan test on the real level of 95%

Figure.4 The Average Taste Value of Catfish Nuggets



Description: The numbers on a bar chart followed by different superscripts letters (a, b, c) showed significantly different results on Duncan test on the real level of 95%

Figure.5 The Average Texture Value of Catfish Nuggets

In Figure 3 shows the difference in the value of the aroma in each treatment starch fillers, where the highest value in the treatment process fillers wheat flour 30% with a mean value of 8.04 which smells fishy, fish nuggets.

In Figure 3 shows the difference in the value of the aroma in each treatment starch fillers, where the highest value in the treatment process fillers wheat flour 30% with a mean value of 8.04 which smells fishy, fish nuggets specific, while the lowest value was obtained in treatment fillers cornstarch 30% to the value of 6.52 which means that smells fishy, fish nuggets specific reduced. In the treatment of starch filler material acquired 30% in value of 6.72 which means no fishy, fish nuggets specific slightly reduced. Results of analysis of variance showed treatment adding flour as a filler in the manufacture of Nugget gave significant effect. Further Duncan test results showed that treatment of C wheat flour filler 30% significantly different with treatment A(starch) and B (cornstarch).

Based on Figure 3 is seen that there is an increase in the concentration of 30%. It is suspected that the aroma of nuggets were produced during frying (cooking) and the addition of flour and spices such as spices (tasteing, salt, onion, milk and pepper) can eliminate the fishy smell of fish as raw material and gives a distinctive taste and smell of Nugget.

This is consistent with the description of Matz (1978) that is a component forming flour taste due to the high protein content in food will cause the smell, texture and appearance characteristics. Further, Winarno (1997) adds salt material is a component of food ingredients are added and used as a tasteing taste and as a preservative. Also according to Palungkun and Budiarti (1992), onion serves as an addition to smell and to enhance the taste of the resulting product.

Taste

The taste is one that affects a person's value to a food acceptance. Acceptance panelists

to taste is influenced by several factors, among others, chemicals, temperature, concentration and interaction with other components (Winarno, 1991).

Organoleptic test results catfish nuggets taste by using different types and different filler materials with the same concentration (30 %) as shown in Figure 4.

Based on Figure 4 indicates that, the value of the highest taste of catfish nuggets obtained in treatment A (wheat flour 30 %) with a value of 7.90, which means good, dominant taste of the fish. While the lowest value was obtained in treatment B (cornstarch 30 %) with a value of 6.54 which means the wine, taste of the fish is slightly reduced.

Results of analysis of variance showed that the addition of flour as a filler significant effect on the value of catfish nuggets taste. Further Duncan test results showed that the addition of wheat flour 30 % (C) significantly different from the treatment of starch (A) and cornstarch (B).

Taste and taste of the fish produced in suspect deals with added salt and amino acid content owned catfish meat and cooking process (frying) which generate taste compounds giver, which led to the pervasive salt during cooking which serves as a conduit taste.

According Lechninger (1993), Rahayu and Nasran (1995); Shahidi (1998), that good taste and somewhat tasty influenced by major components, namely peptides and amino acids contained in fish meat. Good taste is influenced by amino acids glutamate and aspartate (Ijong and Ohta, 1995).

Hadiwiyoto (1993) adds that fish taste caused by biochemical reactions that occur

in fish flesh. Besides the typical fish taste compounds produced by the volatile and non-volatile compounds. Volatile compounds that act, namely carbon and alcohol (Tunnan free fatty acids), sulfur, bromfenol and hydrocarbons, while the non-volatile compounds that act is a compound having a molecular weight (Mw) lower than nitrogen compounds (free amino acids, peptides, nucleotides and bases organic).

Fish taste slightly reduced at Nugget catfish allegedly more influenced by other additives such as onions, pepper and binder (filler) such as flour so that the taste of the fish is reduced. This is according to Matz (1978) that is a component forming flour taste due to the high content of protein and carbohydrates contained in food will cause aroma and taste typical of the product.

Texture

Texture is one of the factors that influence the choice of consumers towards a food ingredient. Texture is the subtlety of a slice at a time by the panelists touched with a finger (Winarno, 1991).

Organoleptic test results catfish nuggets texture by using different types and different filler materials with the same concentration can be presented in Figure 5.

In Figure 5 above indicates that the value of the highest texture of the fish nuggets obtained at the filler C (wheat flour 30%) with a mean value of 7.56 is solid, compact, somewhat chewy. While the lowest value was obtained at the Nugget with filler B (cornstarch 30%) to 6.49, which means a rather dense, somewhat compact, less chewy. In the treatment of filler A (tapioca 30%) with a mean value of 6.81 is solid, compact, somewhat chewy.

Organoleptic

Results of analysis of variance show that your treatment of flour of different fillers significant effect on the value of catfish nuggets texture. Duncan test results showed that the treatment of the filler flour significantly different from the treatment of filler material tapioca flour and cornstarch, and vice versa filler starch is not significantly different from the filler cornstarch.

Compact, slightly chewy and dense at the catfish Nugget had expected more influenced by flour made as a filler material containing starch. Besides compactness and elasticity can be influenced also by the length of cooking (frying), and oils used when frying Nugget. This is according to Potter (1973) starch contained in the Nugget at the time in fried perfectly gelatinized and the resulting texture of the resulting hard and elastic (rubbery). It also Nugget used more filler that could adsorb more amount of emulsifier was less, causing hard / solid.

Conclusions

From the research, preference level test for catfish nuggets with different starch filler material at the same concentration (30 %) showed significant effect on all parameters organoleptic tests, namely: appearance, aroma, taste and texture. The best filler material on catfish nuggets obtained in the treatment of flour with an average value; appearance 8.12, smell 8.04, taste 7.56 and texture 7.90.

References

Budiarti A. 1992. Garlic Lowland. Penebar Organization, Jakarta.
Burhan. 2004. A practical guide to select and handle fishery products. Publisher PT. Gramedia Pustaka Utama. Jakarta.

Chen SD, Chen HH, Chao YC, Lin RS.,2009. Effect of Batter Formula on Qualities of Deep-Fat and Microwave Fried Fish Nuggets. *Journal of Food Engineering* 95: 359-364.
De Man TM. 1977. Food Chemistry Institute of Technology Bandung. Bandung.
Fahrul. 2004. Making Fish Nuggets of Carp (*Cyprinus carpio*). Paper.Department of Post-Harvest Technology Graduate School of Bogor Agricultural University. Bogor
FG Winarno. 1991. Food and Nutrition. Gramedia Pustaka Utama. Jakarta.
Hadiwiyoto S. 1993. Fishery Product Technology. Volume 1, Yogyakarta; Publisher Liberty. Pages: 138-139.
Ijong FG and Y. Ohta 1995.Armino Acid Composition of Bakasang, Traditional Fermented Fish Sauce. *Journal of Bioscience and Bioengineering*
Lechninger AL. 1993. Fundamentals of biochemistry. Volume 2. Translator: Thenawidjaja N. Translation of the Principles of Biochemistry. Jakarta. Erland publisher.
Matz SA. Cookies and Cracker 1978.Tecnology.The AVI Publishing Co. Inc. Westport. Connecticut.
Mehrdad Haghshenas, Hedayat Hosseini, Kooshan Nayebzadeh, Amin Mosavi Khanghah, Behnoosh Shabkoohi Kakesh and Rozita Komeily Fonood,. 2014. Production of Prebiotic Functional Shrimp Nuggets Using β -Glucan and Reduction of Oil Absorption by Carboxymethyl Cellulose: Impacts on Sensory and Physical Properties. *Journal Aquaculture Research Development* 5(4)
Mesra. 1994. Nugget Chicken Nugget and Shrimp. *Bulletin Hero*, May 1994. Jakarta.
Ngadi M, Li Y, Oluka S,. 2007. Quality Changes in Chicken Nuggets Fried in

- Oils with Different Degrees of Hydrogenation. *LWT-Food Science and Technology* 40: 1784-1791
- Rahayu S and Nasran S. 1995. Fish Wood (Katsuobushi) As Seasonings Cuisine. Jakarta; LIPI Widya Karya Proceedings of the National Benefits Traditional Food.
- Sastrosupadi A. 1994. Design of Experiments Practice for Agriculture.
- Soekarto ST and Hubeis M. 2000. Organoleptic Methodology Research. Laboratory Instructions, Bogor; Inter-University Center for Food and Nutrition, Department of Food Science. Bogor Agricultural University.
- Soekarto ST. 1990. Fundamentals of Standardization and Quality Control of Food. Inter University Center, Bogor Agricultural University. Bogor
- Yavari A, Heshmati A, Hamed M, Haghbin S,. 2011. RETRACTED: VIS/NIR Hyper-Spectroscopy Technique for the Measurement of Moisture and Fat Contents of Breaded-Fried Chicken Nuggets. *Food Chemistry* 127: 645-650.
- Yuniardo N. 1995. Fish Nugget Recipe. InfoResep.com [inforesep.com/resep-Nugget ikan.html](http://inforesep.com/resep-Nugget_ikan.html) - Cached - Similar.