

STUDY ON PATIN FISH MACARONI PRODUCTION AS A LOCAL PROMINENT PRODUCT

by:
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Abstract

This research was conducted in March 2012 at the Laboratory of Fisheries Technology and Food Chemistry, Faculty of Fisheries and Marine Science, University of Riau. The aim of this study was to determine the level of consumer acceptance in the macaroni with adding of fish flesh, and to know the amount of fish flesh appropriate to be added in the manufacture of macaroni and catfish were in accordance with consumer tastes.

Macaroni catfish is a product derived from a mixture of flour, water, eggs, fish flesh and with adding of spices mixed to become pasta, then printed with the machinery extruder the last dried in a oven. The method used in this research was the experimental method, which was directly observed in the manufacture of macaroni catfish.

The result of this research showed that macaroni catfish can be accepted by consumers both in terms of appearance, taste, flavor and texture because the percentage was 71.25% - 85% from 80 panelist. The best macaroni based on all treatments was macaroni with the addition of 20% of fish flesh (M2). The Characteristics of macaroni catfish 20% (M2) was a faded yellow, the fish smell and the taste was felt and the texture of macaroni was felt hard.

Key Word: Macaroni, Consumer, Catfish (Pangasius hypophthalmus).

1. INTRODUCTION

The cat fish *Pangasius hypophthalmus* representing one of important economic fish which many conducting in Riau Province. Since introduced 1980, this fish conducting continue to expand and in the year 2006 tired production 9.284,5 ton, mounting 83,3% compared to year 2003 which its production equal to 7.730,6 ton (DKP of Riau Province, 2007).

Cat fish the including result of fishery which quickly decay because protein content, its high water rate and fat so that easy to decomposed by bacterium if indirectly handled. On that account to maintain freshness and also lengthen a period to keeping require to be conducted by processing and pickling variously, and at the same time also to take care of its exploiting remain to stabilize along with make-up of its amount.

Processing of fishery result at the moment have experiencing of many progress, the effort which have been conducted aim to for diversified of product to be consumer have many choice so that do not happened saturation in consuming food products result of



processing which is standard have materials of fish, and one of the diversified the processing of fish macaroni of cat fish.

The research which have hit to be diversified from cat fish became to fish nugget of cat fish (Suparmi and Dewita, 2001) and from result of research application have society which till now have become the effort household industry by the name of group of effort Kindness of Mulya residing in Thorn District Of Mandau Sub-Province Bengkalis, Riau.

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Then research hereinafter about making of dry noodles fish of cat fish with addition of CMC got by best result that is: texture (addition of fish flesh of cat fish 20% and CMC 1%), aspect (addition of fish flesh of cat fish 30% and CMC 1%), odor (addition of fish flesh of cat fish 20% and CMC 1%), feeling (addition of fish flesh of cat fish 30% and CMC 1%) (Suparmi, et al. 2009).

Other research also regarding exploiting of fish of cat fish as alternative diversified by processing of fish burger of cat fish with different fixative type and different size measure (Suparmi et al. 2003) which obtained that addition of fish flesh of cat fish as maker of burger can improve content of nutrition in burger, also for the sensory (odor, flavor, feel, and texture) can be accepted by consumer (89,5%), and also there are 90,5% consumer expressing to agree.

As waste anticipation result of processing of fish of cat fish also have been [done/conducted] [by] research concerning exploiting of fish husk of cat fish become husk crisply with different flavor formulation (Suparmi and Iskandar, 2003).

Pursuant to research which have been conducted by hence writer interest to diversified by fish of cat fish become *pasta*, like known that one of product in form of pasta among others making of macaroni

Macaroni represent made of food-stuff whole-wheat mixture and other food-stuff, printed in form of ribbon reed and dried. Macaroni can be allied into food various type. Because besides its for unique and delicious likely, macaroni also contain value of nutrition high. And seen from its value of him, idiosyncrasy of macaroni is rich of carbohydrate (especially extract) and protein able to fulfill requirement of human being nutrition.

Protein in macaroni product vary between 10-18 (gratuity/%) in the form of running dry and 2-8 (gratuity/%) after cooked. But, as does product of other bulk, sour composition of amino in macaroni product less well-balanced especially because lowering of content of lysine.

Idiosyncrasy of macaroni for example is: rich of carbohydrate will be complex especially extract, high of its protein content, fatty lower, and all important is do not cause fat. Beside that is easy to prepared and available in hundreds of size measure and form and also can be used in hundreds of cookery type. Its making also more simple and because its situation run dry, hence this kept durable product.

Macaroni have been recognized and accepted by society, but macaroni with addition of fish flesh there is no, though fish have high protein and potential enough to be developed. So far no one have done furthermore research with exploiting of fish flesh of cat fish as source of protein of animal become macaroni product becoming pre-eminent local product of Riau. Of the description hence writer interest to conduct research about processing of fish macaroni of cat fish as pre-eminent local product.

This research aimed public is to give its adequate information, precise, accurate and totally to all related parties and government of Riau Province in general in exploiting of fish resource and development of fish of cat fish as local pre-eminent fish become various newly fulfilling standard. Special target; obtaining new application technology in applying of processing of fish of cat fish become macaroni product as pre-eminent product, obtaining eligibility storey; level in an optimal fashion through applying study acceptance study and consumer quality of product fulfilling standard, making typical present or local souvenir of Riau owning separate specification at product had to be yielded, with refer to activity to obtain; get patent product from result of research I which have.

2. METHODE

The research executed in the year 2012 in Laboratory of Processing Technology Fishery and Chemistry Result of Fishery, Faculty of Fishery and Marine Science University of Riau. The materials used at making of fish macaroni of cat fish are whole-wheat, fish flesh of cat fish, dusty soda, salt, water, vinegar, egg, garlic and shallot, and materials formulation in making of fish macaroni of cat fish (*Pangasius hypopthalmus*) can be seen at Table 1.

Table of 1. Formulation in making of fish macaroni from *Pangasius hypopthalmus*

Materials	M0	M1	M2	M3
wheat	1000g	1000 g	1000 g	1000 g
flesh fish (cat fish)	-	100 g	200 g	300 g
salt	5g	5 g	5 g	5 g
water	370g	370 g	370 g	370 g
vinegar	5g	5 g	5 g	5 g
egg (item)	3	3	3	3
shallot mill	1 g	1 g	1 g	1 g
garlic mill	1 g	1 g	1 g	1 g

Method Research

Research conducted with experiment method that is conducting attempt with making of fish macaroni of cat fish (*Pangasius hypopthalmus*), with treatment of research which compose two phase. The first phase, research conducted experimentally that is doing Complete Random Device (RAL) of is non is factorial. Its treatment usage of fish flesh raw material of cat fish which consist of 4 levels that is M0 (without addition of fish flesh), M1 (fish flesh 100 g), M2 (fish flesh 200 g), M3 (fish flesh 300 g) with restating counted 3 times and set of attempt this research fish macaroni of cat fish different weighing counted 12 unit.

Procedure Research

Making of fish macaroni of cat fish (Astawan)

In general making of macaroni consist of three phase, that is mixing (mixing), ekstrusi (forming of macaroni), and draining. In course of mixing, water enhanced at flour is till yielded dough (*pasta*) with rate irrigate around 31 [gratuity/%]. Its meaning, in 100 dough gram consist of 31 gram irrigate and 69 gram of semolina / flour (Astawan, 2001). Step and process processing of fish macaroni of cat fish cover:

Sweeping of fish of cat fish

Head, fishbone and tail of cat fish thrown, flesh cleaned and then cleaned and leak. The flesh pulverized by using blender. Then flesh which have flesh deliberated counted 100 gram, 200 gram, and 300 gram.



Mixing of materials and making of dough.

Materials 1000g whole-wheat added by additional materials (egg, salt, garlic, shallot, dusty soda and vinegar) mingled all with flesh of cat fish as according to treatment 0% at treatment of M0, addition 10% fish flesh of cat fish for the treatment of M1, 20% fish flesh of cat fish for the treatment of M2, and 30% fish flesh of cat fish for the treatment of M3. In course of mixing, all important matter which must be paid attention is to pay attention yielded dough as possible do not contain air bubble (which can formed by because squealer). If this air bubble do not be eliminated from dough, hence at final product will be formed by small bubbles and product colour become to turn white. Despitefully, air bubble can lessen strength of final product in maintaining its for after cooked.

Extruction process

Dough which have been mingled till flatten perfection, and then formed according to desire by using machine of extruder. After finishing from process of extruction, macaroni which have in form of that dried.

Draining

Process its draining conducted by using oven to be its temperature can be arranged so that remain to stabilize that is about 50-60 °C. Draining conducted during more or less 13 hours, and during draining have to be paid attention the condition of macaroni situation to be flattening to be hit by heat, because can cause macaroni become harsh and its surface break effect of warm-up of over.

Draining in making of pasta products is to degrade rate irrigate from around 31 (gratuity/ %) become 12 to 13 [gratuity/%], so that have the character of to ossify, can maintain its for and can be kept long times.

Packaging

These days have made available thousands of packaging with various type, size measure and form able to be used for the products of macaroni. All the packaging have the same function that is taking care of product to be free from contamination, protecting product of damage during distribution.

Hedonic test

According to Kartika et al, (1988) hedonic test used to measure storey; level acceptance of consumer to product by using sensory exist in body (the five senses). In assessment, panelist asked to lay open its personal comments about like or dislike, and them tell reason like or do not like him to product. Assessment use panelist do not train amounting to 80 people from various circle, that is children start from age between 6-12 year (20 peoples), adolescent of age between 12-20 year (20 peoples), adult old age between 20-30 year (20 peoples), and old fellow circle with age between 30-45 year (20 peoples) expressing like or dislike to fish macaroni with addition of fish flesh (cat fish).

Chemical Analyze

The chemical analyze conducted to know values content of nutrition and to support data of sensory at the same time equip data concerning fish macaroni of cat fish, covering water rate analysis (Sudarmadji et al., 1997), micro method protein rate by *Kjeldahl* (Sudarmadji et al. 1997), fat rate (Sudarmadji et al., 1997), and rehydration capacity (Elly, 1990).

3. RESULT AND DISCUSSION

1. Test Acceptance of Consumer



Test acceptance of consumer for the assessment of macaroni with addition of fish flesh of cat fish done by using hedonic test which consist of 80 panelist do not train. This hedonic test of panelist is also asked to give assessment to macaroni with addition of fish flesh of cat fish covering aspect/colour, odor / flavor, feel, and texture.

To know level acceptance of consumer given by 80 panelist peoples do not train to macaroni aspect of cat fish can be seen at Table 2.

Table of 2. Mean mount acceptance of consumer to macaroni sensory with addition of fish flesh of cat fish.

Criteria	M ₀		M ₁		M ₂		M ₃	
	panelist	%	panelist	%	panelist	%	panelist	%
Like	63	78,75	64	80	68	85	64	80
Dislike	17	21,25	16	20	12	15	16	20
Total	80	100	80	100	80	100	80	100

Pursuant to Table of 2, seen that panelist expressing to take a fancy to macaroni sensory of cat fish that is 63 peoples (78,75%) and which do not like counted 17 peoples (21,25%) for the treatment of M₀, for the treatment of M₁ taking a fancy to amount to 64 peoples (80%) and dislike counted 16 people (20%), for the treatment of M₂ taking a fancy to amount to 68 peoples (85%) and dislike counted 12 people (15%), and for the treatment of M₃ expressing to like counted 64 peoples (80%) and dislike counted 16 peoples (20%).

Pursuant to result of research can know that treatment with addition of fish flesh do not have an effect on reality to macaroni sensory where (p 0.05). Pursuant to result of research obtained by treatment of M₂ (usage 200 fish flesh gram of cat fish) is treatment which is best to be seen from amount of panelist which assessing compared to high sensory of the other.

In general first impression which seen by consumer at the (time) of assessing product usually through aspect and or vision of product. The consumer more tend to chosen product owning interesting aspect. This aspect usually relate to form, size measure, colour, nature of surface like is bleak, lustrous, level off, and is surging (Soewarno, 1981).

Colour of is necessary for many food, both for food which do not be processed and also to which manufacture. Colour play a part important in acceptance of food by consumer, colour also show promise to regarding change of chemistry in food (Deman, 1997). Yielded colour at this macaroni is turning yellow and surface a few/little harsh because it is true more influenced by bread flour and egg yolk becoming its elementary materials, colour turn yellow from the macaroni some of coming from enhanced by egg yolk is time process dough and mixing. Saleh (2002) in Rahmiaty (2006), please express that functioning egg yolk give good colour at yielded pasta dough.

Pursuant to result of research known that value feel best at macaroni according to assessment of panelist is treatment with addition of flesh of cat fish 20% (M₂) that is equal to 75% (60 from 80 panelist people) with criteria like. This matter because of by protein content and fat its fish flesh (Fair-Sized M₂), because can generate to feel bitter because excessive fat content.

Feel to play a part important in determining final decision of consumer to accept or refuse a food. Though result of research to better other parameter, but if feeling product give assessment is not delicious hence the product will be refused by consumer (fellows, 2000).

Feeling to represent one of the factor influencing acceptance of consumer to a product. Each and everyone have concentration boundary of very low to a feeling to be still can be felt, this matter referred as with threshold. This not same boundary per head and someone threshold to feeling is same nor different (Winarno, 1997).

Winarno (1992), please explain that feel delicious or its do not a[n food product of effect the existence of acids of amino in protein and also fat which implied in the food. Feel

is also influenced by some factor that is chemical compound, temperature, interaction and concentration with component feel otherly (Fachruddin, 2003).

Odor of including parameter determining to feel is delicious than a food product. In food industry, examination to odor of vital importance because swiftly can give assessment to result of its industry, do its product is taken a fancy to or in disfavour with consumer (Soekarto, 1990).

In each food, yielded odor that is from sow vitamin which condensing so that can come into odor the five senses. In general accepted by odor is brain and nose represent mixture 4 odor especially make fragrance, acid, rancid and char (Winarno in Beneldy, 2009).

Texture represent one of the factor influencing consumer choice to a food product. most characteristic is mould hardness, water content and cohesive (De Man, 1997). Assessment to texture a food materials is usually conducted with hand finger. Fingertip have special sensitivity and very good for assessing commodity or product (Soewarno, 1981).

Naroki and of Kanoki (1992), please express that proportion of enhanced whole-wheat will be big its influence to product texture and the mentioned caused by the happening of gelatinisasi during warm-up with water.

Texture from a food-stuff will influence goal feel which generated by the materials. Texture represent a group of nature of generated by physical is structural element able to be felt by sense of touch (Poernomo, 1995).

2. Characteristic Macaroni of Cat fish

Pursuant to result of hedonic test which have been conducted to panelist, hence got by difference of characteristic among macaroni with addition of fish flesh 0% (M0), 10% (M1), 20% (M2), and 30% (M3).

Table of 3. Characteristic Macaroni with addition of fish flesh; 0% (M0), 10% (M1), 20% (M2), and 30% (M3).

Characteristics	Treatments			
	M ₀	M ₁	M ₂	M ₃
Colour	Light Yellow	Light Yellow	Light Yellow	Light Yellow
Flavor	Strong flour	Light flour	Fish	Fish
Taste	Flour and egg	Light flour	Strong fish	Strong fish
Texture	hard	hard	Light hard	Light hard

3. Chemical Analysis

Obstetrical of nutrition in a product represent parameter which necessary for consumer in considering election of consumed food. One of way of to determine content of nutrition a product that is by using analysis of chemical (Table of 4).

Table of 4. Mean chemical composition with addition of fish flesh of cat fish

Composition	Treatment			
	M ₀	M ₁	M ₂	M ₃
Water	12.36	12.29	12.24	12.14
Protein	12.17	14.11	18.67	22.94
Fat	2.26	2.12	1.84	1.60
Rehydration capacity	29.39	36.73	39.78	27.01

Water



Pursuant to data of Table of 4, can be seen that rate mean irrigate macaroni of cat fish range from 11.07% to 12.52%. highest Water rate is treatment of M0 that is 12.52%, while very low at treatment of M3 that is equal to 12.07%. In general rate irrigate at each treatment do not differ reality, this matter supported by result of research that treatment with addition of fish flesh do not have an effect on reality to rate irrigate macaroni, (p 0.05).

Pursuant to result of research that treatment with addition of fish flesh do not have an effect on reality to rate irrigate macaroni. This matter caused by final process making of macaroni is draining process, so that water rate which consist in each treatment will flatten its water rate storey; level effect of draining.

Measurement of rate irrigate in each food materials of vital importance, high or is low obstetrical of water in food materials will determine quality of end of a product. Water rate represent parameter which is common to be required in standard quality of a food materials, because rate irrigate in food materials content very is determining of possibility the happening of reaction of biochemistry (Mainaliza in Muhajir, 2009).

High lower water rate him influenced by gluten which consist in whole-wheat. Gluten measure up to which is *hydrofobic* so that pregnant pasta product of high gluten will contain low water rate (De Man,1997).

Protein

Obstetrical of protein in a food materials represent separate consideration to one who consume food. Pursuant to data of Table of 4, that macaroni protein rate mean of cat fish range from 11.94% to 22.98%. Highest Protein rate is treatment of M3 that is 22.98%, while protein rate of very low at treatment of M0 that is equal to 11.94%.

In general protein rate each treatment to differ reality, this matter supported by result of research that treatment with addition of fish flesh have an effect on reality to macaroni protein rate, (p 0.05). Pursuant to result of research of test continue (different test of smallest reality) indicating that protein rate average treatment of M0 (12.17%) do not differ reality with treatment of M1 (14.11%) and M2 (18.67%). But protein rate average at treatment of M0 (12.17%) differing very real with treatment of M3 (22.94%). Rate protein average at treatment of M1 (14.11%) do not differ reality with treatment of M2 (18.67%), but differ reality with treatment of M3 (22.94%). While protein rate average treatment of M2 (18.67%) do not differ reality with M3 (22.94%).

Usage of pregnant raw material of high protein will yield product of processing with high protein content. So also divertingly where raw material owning low protein content will yield product of processing with low protein content (Paranginangin et al., 2000).

Winarno in Syarasita (2009), protein represent a food which necessary for body because functioning as constructor and regulator in body. Rate protein composition in food-stuff different each other depended from materials.

Fat

Pursuant at Table of 4, that fish macaroni fat rate mean of cat fish range from 1.61% to 2,28%. Highest Fat rate there are treatment of Mo that is 2.28%, while fat rate of very low at treatment of M3 that is equal to 1.58%. In general fat rate each treatment to differ reality, this matter supported by result of research that treatment with addition of flesh of cat fish have an effect on reality to macaroni fat rate, (p 0.05).

Pursuant to test continue (smallest real difference) indicating that fat rate average at treatment of M0 (2,26%) differing reality with treatment of M1 (2.12%), M2 (1.84%) and M3 (1.60%). Rate fat average at treatment of M1 (2.12%) differing reality with treatment of M2 (1,84%) and M3 (1,60%). Rate fat average treatment of M2 (1.84%) differing reality with treatment of M3 (1.60%).

Winarno (1997), please express that fat almost there are at all of food materials with content which different each other. However oftentimes enhanced to intend to food-stuff

with various target. In processing of functioning fat food materials as hot conductor media like cooking oil, and butter of margarine.

Fat which implied in food materials represent one of the content of nutrition which there are in food materials. Target of addition of fat food materials to improve; repair food materials physical structure and aspect and also add value of nutrition and give goal feel crispy at food materials (Ketaren in Wanherlina, 2003).

Fat represent materials producer of compared to biggest energy of other food-stuff. It is true do not all fish have high fat content, some of fish there is pregnant also low fat rate. At fish owning low fat rate pregnant of big total protein (Hadiwiyoto in Beneldy, 2009).

Rehydration Capacity

Pursuant to result of seen research at Table of 4, that rehydration capacity fish macaroni range from 21.16% to 52.03%. Rehydration capacity highest at treatment of M1 that is 52.03%, while very low at treatment of M3 that is equal to 21.16%.

In general rehydration capacity each treatment do not differ reality, this matter supported by result of research that treatment with addition of flesh of cat fish do not have an effect on reality to rehydration capacity fish macaroni (p 0.05).

Pursuant to result of research known that treatment with addition of flesh of cat fish do not have an effect on reality to rehydration capacity macaroni. But if/when seen from result of enumeration to rehydration capacity macaroni hence can know that rehydration capacity highest there are treatment of M2 that is with addition of flesh of cat fish 20% that is 39,78% and very low at M3 that is 27.01%.

Rehydration capacity a food product very influenced by protein content and its fat content, where protein height can cause its water absorption of excelsior because dissolve protein basically in water, conversely if its high fat content hence can lessen its energy of him because basically insoluble fat in water.

4. CONCLUSION

Result of research can be concluded that macaroni with addition of fish flesh of cat fish in general taken a fancy to and accepted by consumer, either from aspect side, feel, and also odor of texture because its percentage 71.25 to 85% from 80 panelist peoples. The best macaroni from all treatment is macaroni with addition of fish flesh 20% (M2). Characteristic fish macaroni (fish flesh 20%: M2) rust colored fade, fish odor felt, feel fish start felt and its of hard it. Average value chemical analyze of macaroni with addition of fish flesh 20% (M2) have rate irrigate 12.29%, protein: 18.67%, fat: 1.84% and rehydration capacity: 39.78%; and pursuant to analysis of chemical, fish macaroni do not have an effect on reality to rate irrigate and rehydration capacity, but have an effect on reality to protein rate and fat rate.

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