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Analysis of the Use of Various Types of Fuel and Smoking Room Temperaturevalue of Nutrition and Organoleptic Smoke Carp (Cyprinuscarpio sp.)

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Introduction

In Indonesia,traditional fish processingdone by the fishermenand his familyalong the beach where the fish landingby means of inherited hereditary processing.Traditionally processed fish products have a wide spread distributionbecause in general the product is relatively stable although durable and packaging very simple(Heruwati,2002).

Fish is one source of animal proteinwidely consumed by the public, easy to get, and the price is cheap.Fish contains many organic and inorganic elements,which is useful for humans. However, fish also quickly experience the process of decayafter being arrested and dead.Fish needs to be handled properlyin order to remain in a condition worth consuming by the community.The fish were not preserved only feasibleto be consumed within a day after being caught. Various ways of durable of fish has been done, but most of them were not able to maintain the properties of natural fish.One way to preserve fishwhich does not change the

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nature of the fish are cooling and freezing. Fish durable traditionally aims to reduce water contentin fish body, so it

does not provide the opportunity for bacteria to breed(Mareta & Awami, 2011).

Smoking is a way of preservation/fish processingusing smokewhich comes from the burning of charcoalor coconut shell,coconut husk,sawdust or rice husks.In this case the smoke contains compoundswhich have durable properties,such as phenol compounds,formaldehydeand others(Anonymous,2011).The smoke formed by the incomplete combustion, ie burning with a limited amount of oxygen. Smoking is done with purpose: 1). Todurable fish(mostly done in countries that have notor developingby utilizing natural materialsin the form of abundant woodand cheap),2).To give a distinctive taste and smell (Murniyati,2000).Actually the smoke itself is very limited preservative power(which depends on the duration and thickness of the smoke),so that the fish can be durable,smoke should be combined with other preservation methods, for example, storage at low temperatures.According to estimatesFAO,2% of the world's fish catchdurable by smoke,whereas in tropical countriesnumber reached 30%(Anonymous, 2007).

Smoking can be done in two ways, ie cold smoking, and hot smoking. The temperature used for hot fumes is quite highso that fish meat to mature.Durability of hot smoked fish,caused by salt,smoke and heat.While in cold smoked fish,caused by salt, acid and drying.

Purpose

This research aims to determinethe influence of different types of smoke fuelson smoked carpwith different temperaturesto the nutritional value of smoked carpand the effects of various types of fuel smokingin the smoked carpwith a range of different temperaturesthe level of acceptance of panelists.

Method

Time and Place

This research was conducted on May-November 2017in the Laboratory of Agricultural Technology Education Study

Programand proximate test donein Chemistry laboratory ofState Agricultural Polytechnic of Pangkep.

Equipment and Materials

Tool used in this researchis a smoke closet. While the materials used consisted ofcarp as many as 60 fish, coconut shell 13 kg, sawdust 32 kg, salt kitchen 6,5 kg.

Procedures:

- Used carp obtained from fish farmers comes from Sinjai regency of South Sulawesi
- Carp are handled and washed thoroughly
- Carp weighed as much as 540 gand added as much salt 20% (108 g)
- Store carp that have been sprinkled with salt,then put in a container bucket for 1 hour
- After that,carp is dipped with clean waterso that the dirt and salt out of the fish body
- Insert carp into the smoke cabinetsaccording to treatmentnamely smoke treatment with coconut shell with two treatments ie temperature 60 and 65oC, likewise with sawdustalso smoked each with temperature 60 and 65oC. Each treatment consisted of three replications.
- Carp smoked for 4 hoursand after it was appointedand cooledto further ready for organoleptic test.

Data collection

The data collected consists ofdata of proximate test and organoleptic test. Proximate conducted test parametersare protein content analysis, fat, ash and carbohydrate. While on organoleptic testingwhich is a subjective assessmentusing the sense of sight, the sense of smell, sense of touch, and sense of taste. The result of sensory assessmentthen analyzed statisticallyso that the results of the assessment are not subjectiveso the data obtained becomes validor trustworthy.

Data analysis

Data analysis used in this research is descriptive analysis.

Results and Discussion

Proximate Test Water content

Result of water content analysisshows the range of water content of smoked fish producedin the research were in the range of 70,1-73,52% with the lowest water contentis in A treatment of 70,01%, following C treatment 71,07, D treatment 72,72% andhighest on B treatment 73,52% (Figure 1).

Figure 1. Water Content of Smoke Carp

Protein

Fish are living creatures that have high proteinaround20%, which is very good for the human bodyand relatively cheap price. Protein itself is a major part of the arrangement (composition) the human body. Protein in fish is useful for (Mareta & Awami. 2011):

- Accelerate body growth (both the height and weight).
- Increase endurance.
- Make intelligent brain.
- Increase generation/good offspring .

In addition, the protein contained in the fish has a good quality,because it contains little cholesterol(a substance that can cause high blood pressure disease) and less fat (Mareta & Awami. 2011).

The results showedprotein content of smoked fish produced during the researchis in range 16,11- 19,35% with the highest protein contentC obtained in the treatment of 19,35%, following A treatment 18,33%, D treatment 18,1% andlowest on B treatment 16,11% (Figure 2).

Figure 2. Protein Content of Smoke Carp

Results of research conducted byPrasetyoet al. (2015) which conducts research on the influence of temperatureand duration of smoketo the quality of milkfish(Chanos chanos Forsk)smoke remove the thorns,

show protein content of smoked fishincreased at 1 hour and 2 hoursthen decreased at 3 hours of smoke. While in this researchsmoke carried out constant during2.5 hoursfor all treatments. This is due to the increase in nitrogen contentas a component of amino acidsin line with the loss of hydrogen due to the heating element. However, the longer the heating can damage the protein(Mao L andWu Tao.2008).The heating causes the structure of the denatured protein, accumulated and became a simpler form. A simpler form of proteinmake the protein unstableand easy to change in other conditions(Georgievetal.,2008). The research Akintola, S.L. (2014), shows that smokesignificant effect on the increase in macro-nutrient especially protein at Penaeus notialis(65,76% on raw materials and67,00% in the smoked sample).

Fat

The results showedfat content of smoked fish produced in this research is in range 0,90-2,92% with the highest fat contentis in C treatment 2,92%, following A treatment 2,28%, D treatment 1,89 andlowest on B treatment 0,9% (Figure 3). According to Prasetyo et al. (2015), Smoking can also increase fat levelson a smoked ingredient.

Figure 3. Fat Content of Smoke Carp

The research Yanar et al. (2006)showed that the fat content of smoked tilapia(Oreochromis niloticus) without the addition of salt increases0,2%from2,64%on fresh fish to be 3,14% after being smoked. Increased fat content of smoked fishcan be influenced byintrinsic and extrinsic factors ofcondition of raw materials used, milkfishclassified as fish with high fat content(>4%) whereas extrinsic factors can be caused by heatand

attachment of liquid smoke componentswhich can react with enzymes in fish tissuesmaking a warning of the rate of change in fat content(Stolyhwo&Sikorski,2005).

Ash

The results showedash content of smoked fish carpis in range 6,63-9,47% with the value of the highest ash content in B treatment 9,47%, following A treatment 9,29%, D treatment7,29% and the lowest on C treatment 6,63% (Figure 4). Determination of ash content aimsto assess mineral content in food,whether still available or notbecause as a parameter of nutritional value of food (Prasetyo et al., 2015)

Figure 4. Ash Content of Smoke Carp Organoleptic Test Color

Organoleptic test resultson color parameter of smoked fish of carpwhich resulted in the researchshows the value range 2,4-3,7 with the highest value on D treatment 3,7; following C treatment 3,4; B treatment2,5 and the lowest on A treatment 2,4 (Figure 5). The results of this researchstill lower than the results of research conducted by Mareta & Awami (2011) which finds the value of organoleptic color test results 3,8.

Figure 5. Color of Smoke Carp

Result of organoleptic test on smell parameterSmoke Carpwhich resulted in the research shows the value of the

range 2,7-3,2 with the highest value lies in D treatment 3,2; following B treatment 3,0; C treatment2,9; and the lowest on A treatment 2,7 (Figure 6). The results of organoleptic test of smell in this researchstill lower than stated by Mareta & Awami (2011) who found the value of smell organoleptic test results of 3,2.

Figure 6. Smell of Smoke Carp

Texture

Result of organoleptic test on texture parameterof Smoke Carp which resulted in the researchshows the value range 2,4-3,3 with the highest valueis in D treatment 3,3; following B treatment 3,1; A treatment2,7 and the lowest on C treatment 2,4 (Figure 7).

Result of organoleptic test of texture in this researchstill higher than that found by Mareta & Awami (2011) which finds the value of organoleptic test results textureonly3,2.

Figure 7. Texture of Smoke Carp Flavors

Organoleptic test resultsparameter flavorsmoke carpwhich resulted in the researchshows the value range 2,7-3,4 with flavors valuesmoke carpThe highest was in D treatment 3,4; following A treatment A 3,2; B treatment3 andlowest on C treatment 2,7 (Figure 8). Organoleptic flavors test

resultsin this research is still lower than the results of research Mareta & Awami (2011) who found the value of organoleptic flavors test results of 3,9.

Figure 8. Flavors of Smoke Carp

Conclusion

Based on the results of the research, then it can be conclude die proximate test results to smoke carp with various fuel source treatmentsfound the lowest water contenton A treatment 70,1%, highest protein contentat C treatment 19,35%, highest fat contentat C treatment 2,92% and the lowest ash contentat treatment B 9,47%.Furthermore, organoleptic test resultspanelist's sense of color, smell, texture and flavorshows the best treatmentis the D treatment ie treatment of smoke fish with temperature 65-70oC with coconut shell fuel.

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