Zambrut

Characteristics of Fish Leather Cob (Euthynnus affinis) Charger with Concentration and Old Dried Materials that May Vary

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Abstract: The aim of the research to know the effect of tapioca's concentration as stuffing agents and time of drining "fish leather" tuna fish. The research of the method was used Rendomize Block design with 2 factors. Each factors consisted of three levels with three repeat. Variable from research is tapioca's concentration Consist of 1.5% (p1), 3.0% (p2), 4% (p3) and time of drining Consist 5 hours (l1), 6 hours (l2), 7 hours (l3) .The parameters of used water rate, rate of starch, protein rate and organoleptic test Consist color, taste, flavor, and texture. The result of research were stuffing agent concentration Showed that an effect to starch rate, protein rate "fish leather" tuna fish. Time of cleaning an effect to flavor "fish leather" tuna fish, but interaction between tapioca's concentration as stuffing agents and time of drining an effect to color "fish leather".

Keywords: Characteristics, Fish Leather, Fish Tuna.

I. INTRODUCTION

The Indonesian archipelago has a very large fisheries potential. A sea of Indonesia has the potential of fish resources at least 6.6 million tonnes per year. Results of study of the Department of Marine and Fisheries (DKP) that the stock of fish resources in Indonesian waters only used approximately 60% of the available potential.

Chemical components of fish meat in the form of elements do not stand alone but is a form of simple and complex compounds. These compounds are building blocks of cells and tissue-constituent meat and some are food substances that are useful for the human body. These substances such as proteins, fats, vitamins, minerals and little carbohydrates. Marine fish is one source of animal protein.
with an average protein content of 18-20%, and a source of calcium with a content of about 20 mg / 100g, Muchtadi [1].

1.1. Identification of problems
a. How to influence the concentration of filler material on the characteristics of leather tuna fish?
b. How ever drying effect on the characteristics of leather tuna fish?
c. How to influence the interaction between the filler concentration and the length of leather drying on the characteristics of tuna fish?

1.2. Research purposes
Knowing the concentration of filler material and the length of drying as well as its interaction with the characteristics of fish leather.

1.3. Benefits of research
a. Diversification processed fish products
b. Extend the shelf life of products,
c. Increase the value of selling the product,
d. Know the process of making fish leather.

1.4. Framework
The addition of fillers into the material (fish porridge) to be dried aims to increase the yield and to facilitate drying.

The filler is added to the fish leather is of the type of starchy. The filler material is binding amount of water in food but have little effect on emulsification. The filler has a fairly high starch content. Starch is added to foods can make products have a denser texture and chewy.

Starch can provide consistency and improve palatibility texture of various foods. The chemical changes of these starches can add stability to a state of extreme pH and stability of the sol and gel forms, from liquid cycle freeze its ability to join with other food ingredients, Buckle [2].

The use of fillers in the manufacture of leather fish as much as 1.5%. The addition of tapioca into a dried material that can absorb the water around 40% (in the cold) and moisture absorption will increase at 55oC - 65oC or during gelatinization also facilitate the drying process, Winarno [3]. In the process of making fish leather drying temperature for this product is 60 ° C for 6 hours.

Starch is added to foods can make products have a denser texture and chewy. The concentration of starch are added to determine the value the taste of food, especially the texture. In addition to the starch, the texture is also formed by the fiber and protein. Sugar in the manufacture of leather fish serves as a flavor enhancer, color, aroma and texture. In making fish leather additions will form the brown sugar in the product. This color is formed by the Maillard reaction involving reducing sugars with primary amine group [3].

The addition of fillers and the drying will increase the carbohydrate content in fish leather products, the more the concentration of filler is added then the carbohydrate content in fish leather products is increasing.

Drying fish leather made with artificial drying using a dryer. The purpose of drying is to increase the shelf life of fish by reducing the water content. In the drying process the water content is reduced from 80% to approximately 10%, [2].

Starch binds water, water that is bound within the starch to be more easily evaporated through a drying process, so that the higher the starch content, the drying process will be faster, Sudarmadji [4].

If the drying process is carried out at a temperature that is too high will lead to case hardening and browning reaction. Drying at a lower temperature and a long time causes hardening of the product and increased production costs. Factors that affect drying consists of air-drying and drying properties of the materials. Factors associated with covering a surface area of air conditioning, heating temperature, air velocity and air pressure. Factors including material properties include the size of the material, the initial moisture content and the partial pressure within the material, Taib [5].
Drying was also carried out to determine the level of maturity of tuna fish leather, because leather is a prodak fish processed fish is ready to eat.

1.5. Hypothesis
Allegedly filler concentration, drying time and interaksiya which affects the characteristics of tuna fish leather.

2. MATERIALS AND METHODS
The materials used in the manufacture of leather fish is fresh tuna fish, fillers such as wheat, tapioca, maezena; sugar, spices, toluene, sulfuric acid, natriun hydroxide 30%, thiosulfate, granulated zinc, hydrochloric acid, phenophetin, distilled water. While the device used consisted of fruit leather tooling and tools for chemical analysis ..

2.1. research Introduction
Preliminary research undertaken is the selection of the best filler to be used in the manufacture of leather fish that is composed of wheat, tapioca and cornstarch.

2.2 Primary Research
2.1.1 Treatment Plan
The treatment consists of two factors, namely the concentration of filler material (P), which consists of three levels and duration of drying (L), which consists of three levels, namely

a. the concentration of filler material (P) consists of:
   - p1 = concentration of 1.5%
   - p2 = concentration of 3.0%
   - p3 = concentration of 4.5%

b. drying length (L) consisting of:
   - l1 = 5 hours
   - l2 = 6 hours
   - l3 = 7 hours

2.1.2 Design of Experiments
The experimental design used in this study is a 3 x 3 factorial design in a randomized block design (RBD) with three replications.

The mathematical model of a randomized block design (RAK) are:

\[ Y_{ijk} = \eta + P_i + L_j + P_L i j + \varepsilon_{ijk} \]

Information:
- \( Y_{ijk} \) = observed values of repetition to j in treatment i
- \( \eta \) = actual general average (median population)
- \( P_i \) = Concentration factor excipients (i = 1, 2, 3, ...)
- \( L_j \) = drying duration factor (j = 1, 2, 3, ...)
- \( P_L i j \) = filler interactions concentration factor and length of drying time
- \( \varepsilon_{ijk} \) = experimental error
Table 1. Design Group Random Design (RAK) factorial pattern 3 x 3 By 3 Times Deuteronomy

<table>
<thead>
<tr>
<th>Concentrations of Fillers (P)</th>
<th>The duration of drying (L)</th>
<th>Deuteronomy group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>p1 (1.5%)</td>
<td>11 (5 hours)</td>
<td>p1</td>
</tr>
<tr>
<td></td>
<td>l2 (6 hours)</td>
<td>p1</td>
</tr>
<tr>
<td></td>
<td>l3 (7 hours)</td>
<td>p1</td>
</tr>
<tr>
<td>p2 (3.0%)</td>
<td>l1 (5 hours)</td>
<td>p2</td>
</tr>
<tr>
<td></td>
<td>l2 (6 hours)</td>
<td>p2</td>
</tr>
<tr>
<td></td>
<td>l3 (7 hours)</td>
<td>p2</td>
</tr>
<tr>
<td>p3 (4.5%)</td>
<td>l1 (5 hours)</td>
<td>p3</td>
</tr>
<tr>
<td></td>
<td>l2 (6 hours)</td>
<td>p3</td>
</tr>
<tr>
<td></td>
<td>l3 (7 hours)</td>
<td>p3</td>
</tr>
</tbody>
</table>

Based on the design of the above, it can be made analysis of variation (ANOVA)

2.1.3 Draft Response

The design used is a draft response to the response to the organoleptic and chemical response characteristics of fish leather. Organoleptic response that was done to the fish leather products include flavors, colors, textures and aromas. The method used is hedonic test, Kartika [6].

2.1.4 Chemical Response

The draft response to the chemicals used in this research is the analysis of water content by distillation method, protein analysis and analytical methods kjeldahl starch content with Schroll luff method [4].

3. RESULTS AND DISCUSSION

Research 3.1 Introduction

Based on the results of organoleptic tests carried out showed that the samples using a filler material to sample the best tapioca. Judging from the results of organoleptic test, and if followed by statistical calculation, the excipients used in the preliminary study did not have any real effect between each sample treatment, so that all the filler material can be primarily used in future research. However, economic considerations tapioca economic value lower than that of wheat and maezena

3.2 Primary Research

3.2.1 Water Content

The water content in a known amount of food needed, because in general the higher the water content contained in a food, the greater the likelihood of food are damaged and not durable.

The results of variance showed that the concentration of filler (tapioca) and the duration of drying does not give effect to the moisture content of leather tuna fish produced, and the interaction of filler concentration (tapioca) P, and the length of drying L. Results of the analysis of water content in fish products leather tuna ranged from 8599% - 9986%. In Reni study (2004), the water content in tuna fish leather ranges from 4,254% - 8782%.

The filler is added in the form of tapioca that binds water, so that the increased concentration of starch, the water bound to be more and more. Raw foods contain fillers are tidakkut binds water, making it easy to be evaporated through a drying process. Differences in concentrations of filler material added quite small only 1.5%, so that the filler is not mempengeruhi water content in tuna fish leather [4].

3.2.2 Starch Content

The results of variance showed that the concentration of filler (tapioca) P, giving a noticeable effect on the level of 5% of the starch content of fish leather swordfish, while the length of drying L, and the interaction of both PL, no significant effect on the starch content of fish leather swordfish resulting from.
Duncan’s multiple range test concentration factor excipients (tapioca) P, show that levels of tapioca starch at a concentration perlakuuan 1.5% (p1) is not significantly different from the starch content of tapioca treatment concentration of 3.0% (p2), but significantly different from treatment with tapioca concentration of 4.5% (p3). Treated starch content of tapioca concentration 3.0% (p2) did not differ significantly by treatment with tapioca 4.5% (p3).

The calculation result shows that the higher the concentration semakain fillers are added, the higher the levels of starch contained in fish leather. This is because the filler ditambahakan tapioca starch content is almost 90%.

3.2.3 Protein Levels

The protein content in fresh fish protein content of 18-20%. In the manufacture of leather tuna fish with raw materials that are digukanan swordfish as much as 66-69%, and the yield of fish leather with a protein content of 40% -62%, so that the product is expected to be an alternative source of protein.

The results of variance showed that the concentration of filler (tapioca) provide a noticeable effect on the level of 5% of the protein content of fish leather swordfish, while the length of drying L, and the interaction of both PL, no significant effect on the protein content of fish leather swordfish produced.

Duncan’s multiple range test concentration factor filler material showed that the protein content in perlakuuan tapioca concentration 1.5% (p1) is not significantly different from the levels of protein in the treatment of tapioca concentration of 3.0% p2, but significantly different treatment with tapioca concentration of 4.5% (p3). The protein content by treatment with tapioca 3.0% (p2) differ significantly by treatment with tapioca 4.5% (p3).

This shows that the higher the concentration semakain fillers are added, the lower the levels of protein in fish leather. Leather fish protein comes from fish raw material, then the number of fish that are added in the manufacture of leather tuna fish will affect the value of protein.

The length of fish drying in the manufacture of leather is not mempengeruhi value leather protein in tuna fish. Because the drying is done at 60 ° C, for 5 hours, 6 hours and 7 hours so that the proteins in the fish leather has not undergone a process of protein denaturation. Fish contains ± 18% protein, essential amino acids are not broken at the time of cooking.

3.2.4 Test Results Appearance

a. Color

The results of variance showed that the concentration of filler (tapioca) P, and the length of drying L no significant effect on against the color of fish leather swordfish while the interaction of both PL, significant effect on the level of 5% to the colors of fish leather tuna produced, Fish laether contain sugar, starch and protein that is high enough, it can cause a brown color in the final product. Brown color caused by the Maillard reaction, namely the reaction between carbohydrates, especially reducing sugars with primary amine group, [3].

Generally fish leather products in the market brownish white. Fish leather results had a brown color, this is due to the raw materials used are swordfish has dark red meat and when heated turns into brown color.

b. Flavor

Based on the results of variance showed that the concentration of filler (tapioca) and the duration of drying and the interaction of both OT does not provide any real effect on the level of 5% to the taste of tuna fish leather produced.

The addition of tapioca until a certain concentration to maintain a sense of raw materials, so that they remain a distinctive flavor tuna.

c. Aroma

Based on the results of variance showed that the concentration of filler (tapioca) P, and the interaction of both PL, no significant effect on the on the aroma of fish leather swordfish, while the
length of drying \( L \), giving a noticeable effect on the level of 5\% on the aroma of fish leather fish the resulting cob.

d. Texture

Based on the results of variance showed that the concentration of filler (tapioca) and the duration of drying and the interaction of both OT does not provide any real effect on the level of 5\% to the texture of leather tuna fish produced.

One of the properties of foodstuffs wet spring is plastic texture. Tenderness is one of the parameters of texture are often used as the basis of the consumer's choice of a product. The texture of the leather fish affected by the concentration of tapioca. Tapioca will cause the fish leather supple, while sugar can cause fish leather gets wet. Konsentrasi tapioca added in leather fish small enough that it does not affect the texture of the fish leather.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

a. Best type of filler material used in the manufacture of leather tuna fish is tapioca.
b. Concentration tapioca significant effect on the level of 5\% of the levels of starch and protein, and does not give a real impact on water content tuna fish leather.
c. The duration of drying no significant effect on the level of 5\% moisture content, starch, and protein leather tuna fish.
d. Interaction concentration and duration of drying tapioca no significant effect on the level of 5\% to moisture, starch, and protein leather tuna fish.
e. Based on the chemical analysis that has been conducted on the product tunny fish leather is known that the water content ranged from 87.36\% - 9986\%, starch ranges from -30.061\% 20.217\% and protein content ranges from 62.710\% 40.585\%.
f. Best sample is a sample p2l2, with tapioca 3.0\% and the duration of drying 6 hours.

4.2 Recommendations

After the research was done on the effect of filler concentration and duration of drying, disarnakan dilakuakan need for further research on other variables, and the shelf life of the product.

V. REFERENCES


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