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Analysis of the Nutritional value of Puyu fish (*Anabas testudineus)* and Acceptability of the Processing

Nurhamidah[1]*, Widia Dara[1]

[1]Department of S1 Nutritionis, University Perintis Indonesia
Jln. Adinegoro Simpang Kamlumpang KM.17 Lubuk Buaya Padang
**email: nurhamidah_29@yahoo.com*

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Abstract
There are two types of iron in food, heme and non-heme, heme is the main source of animal protein and has good availability for absorption by the body and quail has good protein. The purpose of this study was to determine the analysis of the nutritional value of Puyu Fish (*Anabas testudineus*) and the acceptability of the processing. The research design used experimental analysis using qualitative analysis with AAS and HPLC methods and organoleptic (*hedonic*) tests were carried out on 30 panelists who were tested statistically with the ANOVA test. Four treatments in this studies was obtained the highest carbohydrate in the steamed treatment was 18,039 grams and the highest protein in the dried treatment was 31,432. The fat content with the fried treatment was the highest (26,027 g) than the steamed treatment (3,897 g). The water content without treatment was the best value (67.20 g) than the dried treatment (9.48 g). Ash content was obtained 20,702 gr for dried treatment greater than untreatment (4,541 gr). The calcium value in the dried treatment (444.83 mc/gr) more than the fried treatment o(200.00 mc/gr). The highest levels of Zing (Zn) in the dried treatment (42.11g) and the vitamin A content of monitored fish was 457 RE. The organoleptic test showed that frying had the highest value of 3.5 in terms of aroma, while in terms of texture and the lowest value is dried was 1.8 in terms of taste. The statistical test showed not significant difference with a p value of <0.05.

INTRODUCTION

Puyu fish is a type of fish that generally live wild in freshwater. This fish is also known by several other names such as betok or betik (Java), puyu (Malay) or pepuyu (Banjar), bale ceppe' (Bugis). In English it is known as climbing gouramy or climbing perch, referring to its ability to climb to land. Its scientific name is Anabas testudineus. Puyu fish breathe in water with gills. But like cork and catfish, puyu also has the ability to take oxygen directly from the air. This fish has a labyrinth organ in head, which makes that possible. This tool is very useful when the puyu fish is experiencing drought and must move to another place that is still watery. Puyu is able to creep up and walk on land by using a gill lid that can be expanded, and applies as a kind of "front foot.But of course this fish can not survive too long on land, and must get water in a few hours or it will die.

Puyu fish is a type of aggressive fish and can be found in various kinds of waters. The natural habitat of these fish is grassy rivers, small rivers, ponds, irrigation ditches, flooded swamps, and various other aquatic areas. This is supported by the labyrinth in puyu fish that

allows to be able to live in various waters even though the water conditions are oxygen deficit and not possible for other fish to live in the area. This fish can also leave the territorial waters by wandering to land as far as 180 cm from the water (Muslim, 2019).

Nutrients are the chemical bonds that the body needs to perform its functions, namely generating energy, building and maintaining tissues, and regulating life processes. Good nutritional status or optimal nutritional status if the body obtains enough nutrients that are used efficiently, thus enabling physical growth, brain development, ability to work and general health at the highest possible level. Nutritional status is less occurs when the body experiences a deficiency of one or more essential nutrients. Nutritional status is more likely when the body obtains excessive amounts of nutrients, causing toxic or harmful effects. Both in the nutritional status of lack and nutritional status more nutritional disorders occur.

Nutritional deficiency can be caused by lack of food consumption, both in amount and quality, deficiency of one or more nutrients can cause several deficiency diseases, suffering from illness and nutritional disorders. Iron is a component of various enzymes that affect all important chemical reactions in the body. Iron is also a component of hemoglobin, which allows red blood cells to carry oxygen and deliver it to body tissues. Iron in food consists of two types, namely heme and non-heme types. Heme iron is a form of hemoglobin and myoglobin, mostly found in meat, fish and poultry and blood processed (Margawati & Astuti, 2018).

Iron absorption begins with the transport of iron through mucosal cells and in the blood. Heme iron is only 5-10% of the iron consumed but absorbed 25% greater than non-heme which is only 5%. Absorption can increase by up to 50% in those who experience iron deficiency.

The speed of iron absorption is under the control of the intestinal mucosa and is influenced by the amount needed by the body and its chemicals. In the body, the main function of iron is in the production of oxygen-carrying components, namely hemoglobin and myoglobin. Hemoglobin is present in red blood cells and is a protein that serves to transport oxygen to various tissues of the body. Myoglobin is present in muscle cells and serves to store and distribute oxygen into muscle cells. In addition to producing hemoglobin and myoglobin, iron can also be stored in ferritin proteins, hemosidirin in the liver, as well as in the spinal cord. As an indicator of the level of iron in the body, ferritin circulating in the blood can be used to assess the status of iron in the body.

One of the efforts to meet the needs of protein macro nutrients is that it can be obtained from puyu fish (Sudargo et al., 2020).

So far there have been no studies that look at the analysis of the nutritional value of Puyu fish (Anabas testudineus). Therefore, researchers want to know the analysis of the nutritional content of puyu fish (Anabas testudineus) and Monitor fish (Rasbora argirotaenia), with the aim to find out the nutritiona.

METHOD

Research of the nutritional value of puyu fish is carried out in agricultural technology laboratory and environmental engineering water laboratory of Andalas Padang University.

The research design used is experimental analytics, raw monitored fish extract, steamed, fried and dried analyzed nutritional value qualitatively, SSA and HPLC and so on fish processed by steaming, frying and dried in organoleptic (hedonic) tests to 30 panelists who already understand about organoleptic tests, and the data obtained is tested statistically with the anova test.

Tools used for the analysis of the nutritional value of monitored fish (Rasbora argirotaenia), blenders, electric ovens, rough scales, analytical scales, a set of uv spectrophotometer tools, chromatography, oven set of destruction tools, porcelain cups, decikators, aluminum measuring pumpkins, erlenmeyer and whatman filter paper, photometer analyzer, and a set of HPLC tools.

The basic ingredients used are: monitored fish obtained from the sweet lime area of Padang City, Chemicals used are, arsenomolybdate, glucose, tetra butylamine hydrolyte, H_2SO_4 concentrated, H_3BO_3, NaOH and N-Hexana, aquadest, acetic acid, chloroform, KI jenh solution, N2 S2 O3, 1% starch solution, propanol, albumin reagents, vitamin A examination kit, amylase enzyme, red metel

indicator, methanol solvent, 300 ml petroleum ether solvent, HCL and organoleptic test form.

RESULT AND DISCUSSION

a. Analysis of nutritional value of puyu fish (*Anabas testudineus*)

Base on results of research have known that analysis of nutritional value of puyu fish (*Anabas testudineus*):

Table 1. Analysis of the Nutritional Value of Puyu Fish (*Anabas testudineus*) in 100 grams of ingredients.

1	Raw	
	Nutritional value	Amount
	Carbohydrates (gram)	13.734
	Protein (gram)	7.372
	Fat (gram)	7.151
	Water level (gram)	67.2
	Ash level (gram)	4.541
	Calsium (mc/gr)	275.86
	Zn (mg)	26.75
	Vitamin A (RE)	<0.50
2	Steamed	
	Nutritional value	Amount
	Carbohydrates (gram)	18.039
	Protein (gram)	5.386
	Fat (gram)	3.897
	Water level (gram)	63.3
	Ash level (gram)	9.376
	Calsium (mc/gr)	237.93
	Zn (mg)	35.09
	Vitamin A (RE)	<0.50
3	Fried	
	Nutritional Value	Amount
	Carbohydrates(gram)	15.264
	Protein (gram)	13.208
	Fat (gram)	26.027
	Water level (gram)	34.3
	Ash level (gram)	11.199
	Calsium (mc/gr)	200
	Zn (mg)	29.82
	Vitamin A (RE)	<0.50
4	Dried	
	Nutritional Value	Amount
	Carbohydrates(gram)	17.355
	Protein (gram)	31.432
	Fat (gram)	21.03
	Water level (gram)	9.48
	Ash level (gram)	20.702
	Calsium (mc/gr)	444.83
	Zn (mg)	42.11
	Vitamin A (RE)	457

From the Table 1 above it is known that of the 4 treatments, carbohydrates are highest in the steamed treatment 18,039 gr and the lowest at no claims of 13,734 gr. The highest protein at the treatment was drained at 31,432 gr and the lowest with a steamed treatment of 5,386 gr.

The highest fat content with fried treatment is 26,027 gr and the lowest with a steamed treatment of 3,897 gr. The water content is highest with no treatment of 67.20 gr and the lowest with a dry treatment of 9.48 gr. The highest ash levels with the treatment were drained at 20,702 gr and the lowest with no treatment of 4,541 gr. Calcium is highest in the drained treatment of 444.83 mc/gr and the lowest with a fried treatment of 200.00 mc/gr. And for the highest Zing (Zn) levels are in the dry treatment of 42.11 mg and the lowest with no treatment of 26.75 mg and the vitamin A content of monitored fish is 457 RE.

So from the four treatments of the puyu fish (raw, steamed, fried and dried) it turns out that by processing can increase the nutritional value content of puyu fish and monitored fish, compared to the results of analysis of the value of fish without treatment (raw). And among these treatments the way it is dried further increases the value of levels of carbohydrates, proteins, calcium and Zn.

b. Organoleptic test of monitored fish treatment (Anabas testudineus)

Organoleptic tests (hedonic tests) are conducted to assess the responsiveness of panelists to the processing carried out on monitored fish such as fried, steamed and dried which includes color, smelling, texture and taste using a range of values 1-5 that are very like (5), very like (4), like (3), rather like (2) and dislike (1). The number of panelists on organoleptic tests that have been conducted amounted to 30 people who have been understood about the implementation of organoleptic tests (Kasmiati, Ekantari N, Asnani, Suadi, 2020). The results of organoleptic tests:

a. Panelist value result

Table 2. Organoleptic test of monitored fish treatment (Anabas testudineus)

Testing	Fried	Steam	Dried
Colour	3,27	3,33	2,2
Smelling	3,5	3,2	2,07
Taste	3,23	2,53	1,8
Texture	3,03	3,4	1,73

b. Puyu fish (*Anabas testudineus*).

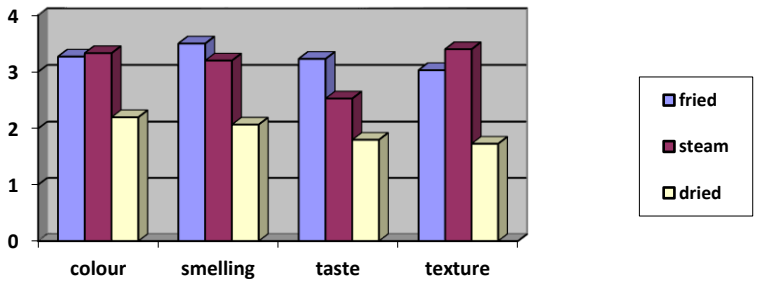

Figure 1. Average organoleptic test results on the color, smelling, taste and texture of puyu fish (*Anabas testudineus*).

Based on the graph above it is known that from the value of organoleptic test results provided by panelists as a whole is processing by frying has the highest favorite value (3.5) in terms of aroma, the 2nd highest favorite value of processing by steaming with a value (3.4) while in terms of texture and favorite value is lowest with drying processing (1.8) in terms of taste. And based on statistical tests the value of fondness for color, aroma, taste and texture as a whole showed no real difference with the value of $p<0.05$.

Compared to the nutritional value of bilih fish (Mystacoleucus-padangensis) its vitamin A is 389.9 RE more (Yuniritha et al., 2015) slightly lower than the vitamin A content of monitored fish which is 457 RE.

CONCLUSION

Drying methods further increase the nutritional value of fish to level of carbohydrates, proteins, calcium, Zn, and vitamin A content of 457 RE. As an altelnative complements the nutritional value for the community in an effort to prevent malnutrition.

REFERENCES

Kasmiati, Ekantari N, Asnani, Suadi, H. A. (2020). Mutu dan tingkat kesukaan konsumen terhadap abon ikan ayang (Decapterus sp .) Quality and Consumers Preference of Shredded Macarel Scad Fish (Decapterus sp .). *Jurnal Pengolahan Hasil Perikanan Indonesia*, *23*(1), 470–478.

Margawati, A., & Astuti, A. M. (2018). Pengetahuan ibu, pola makan dan status gizi pada anak stunting usia 1-5 tahun di Kelurahan Bangetayu, Kecamatan Genuk, Semarang. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *6*(2), 82–89. https://doi.org/10.14710/jgi.6.2.82-89

Muslim, M. (2019). Teknologi Pembihan Ikan Betok. In *Journal of Chemical Information and Modeling* (Vol. 53, Issue 9). http://www.elsevier.com/locate/scp

Sudargo, T., Prameswari, A. A., Aulia, B., Aristasari, T., Isnansetyo, A., Puspita, I. D., Budiyanti, S. A., Putri, S. R., & Alfionita, K. (2020). Analisis Zat Gizi Makro, Gizi Mikro, Dan Organoleptik Makanan Tabur Berbasis Tuna Dan Labu Siam Untuk Terapi Diet Prediabetes. *Media Gizi Mikro Indonesia*, *12*(1), 1–14. https://doi.org/10.22435/mgmi.v12i1.3979

Yuniritha, E., Juffrie, M., Ismail, D., & Pramono, S. (2015). Pengembangan formula sirup zink dari ekstrak ikan bilih (Mystacoleucus- padangensis) sebagai alternatif suplementasi zink organik pada anak pendek (stunted) usia 12-36 bulan *Gizi Indonesia*, *38*(1), 49.https://doi.org/10.36457/gizindo.v38i1.167