



The Journal Gastronomy Tourism

Journal homepage:

<https://ejournal.upi.edu/index.php/gastur/index>



Local Food Tuna Into Floss In Nusa Lembongan-Bali (Processing, Hedonic Test, And Nutrition)

Ni Putu Eka Trisdayanti*, I Made Purwa Dana Atmaja, Made Hendrayana

Culinary Arts Study Program, Bali Tourism Polytechnic, Indonesia

*Correspondence: E-mail: ekatrisdayanti87@gmail.com

ABSTRACT

There is no further processing of tuna in Nusa Lembongan, therefore when it is not sold out, tuna will rot and be thrown away, even though the protein content is high and the price is affordable. To overcome this, it is necessary to process tuna, so that later it can have a long shelf life, high economic value. Based on these problems, a research was conducted on the processing of local tuna in Nusa Lembongan into floss, then measuring the level of consumer preference and testing the nutrition. This research method is experiment, hedonic test with 50 panelists, and nutrition test at Udayana University Analytical Laboratory. The data analysis technique of this research is descriptive qualitative. The results of the research on the ingredients for making tuna floss are clean tuna, thick coconut milk, liquid coconut milk, shallots, garlic, red chilies, galangal, ginger, turmeric, coriander, sugar, salt, pepper, lime leaves, and coriander leaves. The results of the hedonic test from 50 panelists in Nusa Lembongan showed that most answered LIKE tuna floss in terms of taste, aroma, texture, and color. The results of the nutritional test for tuna floss showed that 100 grams of tuna floss contained 30.33 grams of carbohydrates, 37.44 grams of protein, 30.36 grams of fat and 503.327 kcal.

© 2023 Kantor Jurnal dan Publikasi UPI

ARTICLE INFO

Article History:

Submitted/Received 28 Apr 2023

First Revised 12 May 2023

Accepted 19 June 2023

First Available online 20 June 2023

Publication Date 20 June 2023

Keyword:

Floss; Tuna; Processing;

Hedonic; Nutrition.

1. INTRODUCTION

Culinary tourism is one of the attractions for domestic and foreign tourists who organize a tour with the aim of enjoying various types of food. Moreover, food is a basic need for humans wherever they are. Currently culinary tourism in Indonesia, especially in Bali, is a mainstay for people in various tourist destinations. Apart from being a business that gains profit and welfare or a source of income, the culinary business is also an effort to introduce regional specialties and a means of tourism promotion (Sari, et.al., 2019).

Culinary tourism based on local food ingredients is important to pay attention to, it must continue to be explored, and developed considering that the Indonesian region has abundant natural resources that can be processed into culinary tourism products. This is done not only to maintain production, but also to preserve culture, especially traditional food (Sari, et.al., 2019).

Nusa Lembongan, for example, is one of the tourist destinations on the island of Bali which is rich in natural beauty. Nusa Lembongan is one of the villages in the form of an island which is the Nusa Penida sub-district, Klungkung Regency. Nusa Penida sub-district is one of the sub-districts of Klungkung Regency which is separated from the island of Bali, which consists of three islands namely Nusa Penida, Nusa Lembongan and Nusa Ceningan.

Nusa Lembongan with an area of 6.15 km² is the Klungkung Archipelago area which is surrounded by beautiful sea/beaches, becoming a tourist attraction, especially foreign tourists. This statement is proven from the results of research on tourist perceptions of the Nusa Lembongan destination from the indicators of awareness, attractiveness, availability, accessibility, destination appreciation, assurance, activity, and appearance where tourists agree with a percentage above 50 percent (Dianasari, L., et al., 2020). Nusa Lembongan has a variety of activities that can provide experiences for tourists such as water sports, mangrove tours and there are spots for selfies such as Devil's Tears, Dream Beach and also the yellow bridge which is a tourist icon besides functioning as a link between Nusa Lembongan and Nusa Ceningan (Dianasari, L., et al., 2020)

However, due to the Covid-19 Pandemic, Nusa Lembongan tourism has experienced a sharp decline. Because of this, some people in Nusa Lembongan have again switched to seaweed farming (Suriyani, LD., 2020). Seaweed is one of the local food ingredients in the Nusa Lembongan area. This shows that the utilization of local natural resources is a business that can be carried out in a sustainable manner and can be used as a culinary business by processing seaweed into a culinary tourism product. However, based on information from informants (local people as well as tourism actors in Nusa Lembongan) the processing of seaweed into a product is not optimal. Seaweed is only processed into jelly and sold in traditional markets.

Previously, training on seaweed processing had been conducted for the people of Nusa Lembongan. Udayana University lecturers carry out community service activities in the form of training activities on processing seaweed into jelly candy (Dharma, et.al., 2016), jam (Wiadnyani, et.al., 2017), and bakpia (Puspawati, et.al., 2018). Apart from Unud lecturers, training from the Klungkung Regency Food Security and Fisheries Service was held on October 4 2019, with the theme Launching of Processed Products and Seaweed Ecotourism. During the training, seaweed was processed into crackers and salads (DKPP, 2019). This shows that local food ingredients have the potential to be developed.

Apart from seaweed, there are local food ingredients in Nusa Lembongan which have the potential to be developed. The authors have proven this from the results of phase 1 research (Trisdayanti, NPE., et al., 2021), namely the Identification and Potential of Local Food

Ingredients as Culinary Tourism Products in Nusa Lembongan, the authors obtained research results that contained local food ingredients other than seaweed which can be developed, namely tuna and poh Lembong (Nusa Penida mango). These local food ingredients have potential but there is no further processing, such as tuna.

During the pandemic, people did not only switch to being seaweed farmers, but also fishermen. Most of the catch is tuna. For about 1 hour to be precise from 05.00-06.00, one fisherman gets an average of 50-100 tuna. The catch is brought to the market to be sold and sometimes also sold to collectors but at a lower price. There is no further processing of tuna into food products, so if it is not sold out, the tuna will rot and be thrown away.

Tuna (*Euthynnus affinis*) is a fish that has many advantages including high protein content, affordable price, and easy to find in the market. The nutritional content contained in 100 grams of tuna, with 100% Edible Weight (BDD), namely 13.7 grams of protein, 1.5 grams of fat, 74.7 grams of water, 8 grams of carbohydrates, 100 calories of energy, 92 mg of calcium, 606 mg of phosphorus, iron 1.7 mg, sodium 202 mg, potassium 227 mg, retinol (vit A) 181 mcg (Ministry of Health RI, 2018). But tuna also has a weakness compared to other types of fish, which is that it quickly decays after being caught (Towadi et al, 2013). Most fishermen in Nusa Lembongan in particular still use traditional handling principles so that the quality they produce is still low. To overcome this it is necessary to do the processing of tuna.

Shredded tuna is a processed fishery product made from tuna meat seasoned with spices. Shredded is processed by boiling, frying, pressing or oil separation. The resulting product has a soft shape, tastes good, and has a relatively long shelf life (Huthaimah et al., 2017). Shredded fish has the characteristics of a soft shape, good taste, distinctive smell, and has a longer shelf life, up to about 60 days, very easy to manufacture and ready to be consumed directly (Suryani et al, 2007) Processing tuna into shredded fish can be a business opportunity agro-industry to provide added value to fish (Hidayat et al, 2018). Shredded fish that is produced if processed and packaged properly can provide culinary business ideas in the form of souvenirs.

Based on the problems above, the authors will conduct research on the processing of local tuna in Nusa Lembongan into shredded tuna, then measure the level of consumer preference for shredded tuna, and test the nutrition of shredded tuna, so that it can provide added value for the promotion of these products.

2. LITERATUR REVIEW

2.1 Fish Floss

According to SNI 01-3707-1995 Shredded is a type of dry food with a distinctive shape made from boiled meat, sliced, seasoned, fried and pressed. Shredded meat is actually a durable meat product that has long been known to the public. Floss is categorized as ready-to-eat food or side dishes. Floss is made from meat that is processed in such a way that it has dry, crunchy and tasty characteristics. In general, the meat used in making beef floss is beef (Suryani et al, 2007).

Fish floss is a type of preserved food made from seasoned sea fish, processed by boiling and frying. The resulting product has a soft shape, good taste, distinctive smell, and has a relatively long shelf life. According to (Suryani et al, 2007) fish floss is a type of processed fish food that is seasoned, processed by boiling and frying. The resulting product has a soft shape, good taste, distinctive smell, and has a relatively long shelf life. (Karyono & Wachid, 2004) stated that shredded fish is a processed fishery product made from fish meat, through a combination of grinding, frying, drying by frying, as well as adding additional ingredients and flavoring ingredients to fish meat. As with floss products made from livestock meat.

Fish floss is a form of processing which is generally made from shredded meat and spices

added, then frying and pressing. Fish floss can be used as an alternative in serving, apart from being practical, it also tastes good because it is added with spices. Fish floss can also be used as an alternative to diversifying processed products, especially for foodstuffs that are less desirable, such as fresh water fish.

The type of fish that is used as the basic ingredient in making fish floss is not yet selective, even all types of fresh and seawater fish can be processed. However, it would be better if you choose a fish that has coarse fiber and does not contain a lot of thorns. Types of fish that have been studied as shredded are tuna (Renol et al., 2020), catfish (Musyaddad et al., 2019) (Setiawati & Ningsih, 2018) (Harianti & Tanberika, 2018), skipjack tuna (Muhammad Ismail & Eka Putra, 2017), milkfish (Abriana et al., 2021).

2.2 Fish Floss Processing Method

The method of processing fish floss based on the method is as follows:

- a. The fish is washed and cleaned, then washed again until clean, the fish is then steamed with boiling water for 20 minutes.
- b. The fish meat is then manually separated from the bones and skin, shredded so that the meat fibers become smooth.
- c. The spices except galangal and lemongrass leaves are then blended with 10 ml of oil and stirred, added galangal and lemongrass until they release a fragrant aroma. Shredded fish meat is added little by little to the seasoning while continuing to stir so that the seasoning is evenly distributed and until the fish shreds are almost dry.
- d. For floss which is processed by deep frying, the mixture of shreds and spices which is almost dry is fried in hot cooking oil at a temperature of approximately 178°C for 5 minutes until it turns golden brown. Meanwhile, shredded is processed using the pan frying method by adding 10 ml of cooking oil or about two tablespoons to the mixture of fish shreds and spices which are almost dry. The frying process was carried out until the fish shreds and spices were completely dry and shredded for 45 minutes at 122°C. Furthermore, shredded manually pressed.
- e. The floss is then cooled until all the moisture has evaporated and then packaged.

2.3 Fish floss

Tuna is a type of fish that is common in society, easy to find in markets, and the price is affordable. Even though the price is cheap, the benefits of tuna are not much different from the benefits of other types of seafood, including:

- a. Maintaining eye health

The content of the benefits of omega 3 found in tuna can reduce the risk of experiencing AMD (Age Macular Disease) or a type of eye disease caused by aging. In addition, the content of omega 3 will also reduce the risk of experiencing eye damage.

- b. Curing rheumatic diseases

Tuna can help in the healing process of rheumatic diseases

- c. Preventing anemia

Tuna has iron content which can prevent anemia

- d. Preventing premature ejaculation

The gills of this tuna can help to overcome and prevent premature ejaculation.

- e. Improving cognitive abilities

Omega 3 contained in tuna can help develop one's thinking skills and cognitive abilities.

- f. Liver detoxification

The content of selenium in tuna can help the liver to carry out the detoxification process or

remove toxins from the body. Selenium can speed up and help the process.

g. Protecting the digestive tract

The content of omega 3 tuna can also help in maintaining the body's digestive tract.

h. Maintaining heart health

The content of omega 3 tuna can also keep the heart beating, thereby reducing the possibility of a heart attack

i. High protein content

The benefits of the protein contained in tuna are increasing muscle mass, increasing endurance, strengthening muscles, binding fat, providing more energy for the body

j. Preventing obesity

Tuna has a high EPA content, which stimulates the release of the hormone leptin which can prevent the desire to eat too much food.

Behind the extraordinary benefits of tuna, there are drawbacks to tuna, namely it is easy to rot so it needs further handling/processing, one of which is processing tuna into floss. Many researches and community service activities have been carried out in the form of processing tuna into fish floss.

2.4 Food Quality

The food consumed by the community, including tourists, must be of good quality. The quality of the food is not only in terms of taste, appearance, texture, aroma (organoleptic) but also has nutrition and is safe for consumption, so that it remains healthy and does not harm consumers.

2.4.1 Hedonic Testing

The preference test is also called the hedonic test. Panelists were asked for their personal responses about their likes or dislikes. Besides the panelists expressing happy responses, likes or vice versa, they also express their level of preference.

2.4.2 Nutritional Quality

Besides being delicious to eat, quality food must have good nutrition. Information on the nutritional value of culinary tourism products can increase the selling value of these foods.

3. METHODS

The object of this research is the local food ingredients for tuna floss (processing, hedonic testing, and nutrition). The location of this research is for the experiments on processing of tuna floss and the hedonic test was carried out in Nusa Lembongan and for the nutritional test it was carried out at the Analytical Laboratory, Udayana University, Jimbaran Campus, Badung Bali. The types of data in this study are qualitative data and quantitative data. The qualitative data for this research are the experimental results and hedonic tests of tuna shredded fish. As for quantitative data, it is the amount of nutritional content of tuna floss (carbohydrates, protein, fat, calories).

The author conducted an experiment in processing tuna floss. After the tuna has been processed, the author asks the panelists for their level of preference for the shredded tuna. The panelists who assessed the shredded tuna were 50 untrained panelists (the people of Nusa Lembongan). Panelists will be given a hedonic test sheet (favorite test). On this sheet the author uses 3 hedonic scales, namely Really Like, Like, and Dislike. Researchers brought shredded samples to the laboratory to be tested for carbohydrates, proteins, fats, calories.

The data analysis technique in this research is descriptive qualitative. The results of experiments, hedonic tests, and nutrition are arranged systematically, presented in the form of narratives and tables, and conclusions are drawn from the research results.

4. RESULTS AND DISCUSSION

4.1 Experimental Data of Shredded Tuna

After doing several experiments, the author found a recipe for tuna floss that suits the author's tastes. The recipe formulation and how to process tuna floss are as follows:

Tabel 1. Recipe Tuna Floss

NAME : Tuna Floss

YIELD : 500 gr

PORTION SIZE :

DESCRIPTION :

No	Ingredients	Quantity	Size	Description
1	Clean tuna	750	g	Seasoned with salt, and steamed until cooked
2	Thick coconut milk	500	ml	
3	Liquid coconut milk	500	ml	
4	Spice	150	g	
5	Red onion	80	g	
6	Garlic	150	g	
7	Red chili	40	g	
8	Galangal	30	g	
9	Ginger	30	g	
10	Turmeric	7	g	
11	Coriander	3	g	
12	Sugar	2	g	
13	Salt	1/2	tsp	
14	Pepper	5	tsp	
15	Lime leaves	3	lb	
16	Bay leaf		lb	

Source: Author

Methods:

- a. Steamed shredded tuna
- b. Blend the spices except lime leaves and bay leaves.
- c. Prepare a pan, pour the seasoning and add the tuna.
- d. Pour thick coconut milk and liquid coconut milk.
- e. Add lime leaves and bay leaves.
- f. Season with salt, pepper and sugar.
- g. Cook while stirring evenly
- h. Cook until the coconut milk runs out and the fish meat dries up.



Figures 2. Tuna Floss Experiment
Source: Author Documentation

4.2 Hedonic Test Data of (Test of Likes) Tuna Floss

After processing the tuna floss, it is followed by a hedonic test (Level of Likeability). The 50 untrained panelists were the people of Nusa Lembongan.

The following is the documentation for the hedonic test in Nusa Lembongan.



Figures 2. Hedonic Test of Tuna Floss in Nusa Lembongan
Source: Research Documentation

Tabel 2. Data Summary of Tuna Floss Hedonic Test Data

Levels of pleasure	Number of Panelists Who Answered			
	Flavor	Aroma	Color	Texture
Really like	5 (10%)	13 (26%)	17 (34%)	22 (44%)
Like	42 (84%)	37 (74%)	33 (66%)	28 (56%)
Do not like	3 (6%)	0 (0%)	0 (0%)	0 (0%)
Amount	50 (100%)	50 (100%)	50 (100%)	50 (100%)

Source: Author

For taste there were 3 panelists (6%) who stated they did not like it, this was when the researchers asked further about the reasons of the panelists, namely they stated that the tuna floss was not spicy enough and lacked salt. Based on this information, researchers feel the need to make several flavors of this tuna floss such as spicy, very spicy, sweet spicy, and others so that it can be an option for consumers, if this tuna floss is further produced and sold to tourist consumers as a souvenir of Lembongan.

4.3 Nutritional Test Data for Tuna Floss

Tabel 3. Nutritional Test Results for Tuna Floss in Nusa Lembongan in 2022

No	Parameter	Unit	Results
1	Carbohydrate	g/100 g	30,33
2	Proteins	g/100 g	37,44
3	Fat	g/100 g	30,36
4	Calories	kcal	503,327

Source: Udayana University Analytical Lab

Laboratory tests to determine the nutrition of tuna floss were carried out at the Udayana University Analytical Laboratory. Based on table 4.3 above, it can be seen that the nutritional value of 100 grams of tuna floss contains 30.33 grams of carbohydrates, 37.44 grams of protein, 30.36 grams of fat, and 503.327 kcal.

The protein content in tuna floss is the highest compared to carbohydrates and fat, because tuna is a fish that is high in protein. The benefits of the protein contained in tuna are increasing muscle mass, increasing endurance, strengthening muscles, binding fat, providing more energy for the body. In 100 grams of fresh tuna contains 100 kcal, 13.7 grams of protein, 1.5 grams of fat, and 8.0 grams of carbohydrates ([Directorate General of Public Health, 2017](#))

In addition to protein, the content of carbohydrates, fat and calories in tuna floss is quite high, this is due to the nutritional contribution of other ingredients such as thick coconut milk and granulated sugar. The coconut milk that is added in making this shredded is quite a lot so as to produce shredded which is high in fat, carbohydrates, and calories

Tabel 4. Comparison of the results of the Tuna Floss Nutrition Test

No	Parameter	Yield in 100 gr		
		Author (2022)	(Anwar, 2018)	(Putra et al., n.d.)
1	Carbohydrate	30,33	Not researched	Not researched
2	Proteins	37,44	40,72	14.36
3	Fat	30,36	23.68	20,28
4	Calories	503,327	Not researched	Not researched

Source: Processed Data

Based on table 4.4 above, it can be seen that there are differences in the nutritional results of tuna floss. This is influenced by many factors such as the type/source of tuna processed, other ingredients, the amount of ingredients used, processing methods, and others.

5 CONCLUSION

The ingredients for making tuna floss are clean tuna, thick coconut milk, liquid coconut milk, shallots, garlic, red chilies, galangal, ginger, turmeric, coriander, sugar, salt, pepper, lime leaves and bay leaves. The results of the hedonic test (liking level) of tuna floss from 50 panelists in Nusa Lembongan showed that most answered LIKE (liked) tuna floss in terms of

taste, aroma, texture, and color. The results of the nutritional test showed that 100 grams of shredded tuna contained 30.33 grams of carbohydrates, 37.44 grams of protein, 30.36 grams of fat and 503.327 kcal.

6 ACKNOWLEDGMENT

The author would like to thank the Bali Tourism Polytechnic (PPB) in particular the Center for Research and Community Service (P3M PPB) which has provided research funding assistance.

7 REFERENCES

- Abriana, A., Indrawati, E., Rahman, R., & Mahmud, H. (2021). Produk Olahan Ikan Bandeng (Bandeng Cabut Duri, Abon Ikan Bandeng dan Bakso Ikan Bandeng) di Desa Borimasunggu Kabupaten Maros. *Jurnal Dinamika Pengabdian*, 6(2), 273–283.
- Anwar, C.-. (2018). Pengaruh Jenis Ikan dan Metode Pemasakan terhadap Mutu Abon Ikan. *Jurnal Fishtech*, 7(2), 138–147.
- Dharma, IGBS., APWK Dewi, IMS. Darmasetiyawan. (2016). Pelatihan Pengolahan Produk Rumput Laut untuk Mendukung Pengembangan Nusa Lembongan sebagai Destinasi Wisata. *Jurnal Udayana Mengabdi*, 15 (2).
- Dianasari, DAML., NM. Tirtawati, HK. Liestiandre, IBP Negarayana, IGG. Saputra (2020). Analisis Pengelolaan Wisatawan Mancanegara di Destinasi Pariwisata Nusa Lembongan Kabupaten Klungkung Bali. *Jurnal Kepariwisata ISSN:1412-5498*. 19 (1).
- Direktorat Jendral Kesehatan Masyarakat, D. G. M. (2017). Tabel Komposisi Pangan Indoensia 2017. In Kementerian Kesehatan Republik Indonesia.
- Harianti, R., & Tanberika, F. S. (2018). Pemberdayaan wanita tani melalui produksi abon ikan lele. *JPPM (Jurnal Pendidikan Dan Pemberdayaan Masyarakat)*, 5(2), 167–180.
- Huthaimah, H., Yusriana, Y., & Martunis, M. (2017). Pengaruh Jenis Ikan dan Metode Pembuatan Abon Ikan terhadap Karakteristik Mutu dan Tingkat Penerimaan Konsumen. *Jurnal Ilmiah Mahasiswa Pertanian*, 2(3), 244–256.
- Indriati, Retno dan Gardjito, Murdijati. 2014. Pendidikan Konsumsi Pangan, Aspek Pengolahan dan Keamanan. Jakarta: Prenada Media Group.
- Kontributor DKPP. 2019. Peluncuran Produk Olahan dan Ekowisata Rumput Laut. <https://dkpp.klungkungkab.go.id/2019/10/07/peluncuran-produk-olahan-dan-ekowisata-rumput-laut/> Oktober 7, 2019. Diakses tanggal 28 Maret 2021
- Muhammad Ismail, A., & Eka Putra, D. (2017). Inovasi Pembuatan Abon Ikan Cakalang Dengan Penambahan Jantung Pisang. *Agritech*, 19(1), 45–54.
- Musyaddad, A., Ramadhani, A., Pratama, M. A., Juliyanto, Safitri, I., & Fitri, N. (2019). Produksi Abon Ikan Lele Sebagai Alternatif Usaha untuk Meningkatkan Perekonomian Masyarakat Desa Pelutan. *Asian Journal of Innovation and Entrepreneurship*, 199–206.
- Palupi, S dan Fitri Abdillah. 2019. Pedoman Pengembangan Wisata Kuliner. Asisten Deputi Pengembangan Wisata Budaya Bidang Wisata Kuliner dan Belanja Kemenparekraf
- Puspawati, NN. IM Sugitha, NW. Wisani. 2018. Introduksi Pengolahan Rumput Laut Menjadi Bakpia di Desa Lembongan, Kabupaten Klungkung. *Buletin Udayana Mengabdi*, 17 (4).
- Renol, Finarti, Akbar, M., & Wahyudi, D. (2020). Mutu Kimia Dan Organoleptik Abon Ikan Tongkol (*Euthynnus Affinis*) Pada Berbagai Lama Penggorengan. *Kauderni : Journal of Fisheries, Marine and Aquatic Science*, 2(1), 82–89.
- Setiawati, I. T., & Ningsih, S. (2018). Manajemen Usaha Pengolahan Abon Ikan Lele (*Clarias gariepinus*) di P2MKP. 12(2), 95–110
- Sari, IM., Viena, AS., haryo W. 2019. Pengembangan Wisata Kuliner Berbasis Bahan Pangan

Lokal sebagai Daya Saing di Desa Wisata Sakerta Timur Kabupaten Kuningan Jawa Barat. *Jurnal Ilmiah Pariwisata*, 24 (3).

Serawan, IK. 2020. Poh Lembongan, Mangga Khas Nusa Penida — Riwayatmu Kini <https://tatkala.co/2020/07/09/poh-lembongan-mangga-khas-nusa-penida-riwayatmu-kini/>

Suriyani, LD. 2020. Siasat Menambah Produksi Pangan Lokal di Nusa penida (bagian 3). <https://www.mongabay.co.id/2020/09/30/siasat-menambah-produksi-pangan-lokal-di-nusa-penida-bagian-3/>.diakses tanggal 28 Maret 2021

Wiadnyani AAIS., IWR. Widarta, NN Puspawati, NM Indri H., IDP Kartika, P. 2017. Pelatihan Pengolahan dan Pengemasan Rumput Laut Menjadi Selai di Desa Lembongan Kecamatan Nusa Penida Kabupaten Klungkung. *Buletin Udayana Mengabdi*, 16 (3).

Zahrulianingdyah, A. (2018) Kuliner sebagai Pendukung Industri Pariwisata Berbasis Kearifan Lokal. *Teknobuga*. 6 (1).