Nutritional Fact of Traditional Cracker (Amplang and Getas) from Bangka Belitung

Arief Rubiana Basarah¹, Patmawati², Muhamad Amin³, Ahmad Fahrul Syarif⁴, Mu‘alimah Hudatwi⁵, Sapto Andriyono²,³

1Study program of Fisheries Product Technology, Faculty of Fisheries and Marine, Universitas Airlangga, Surabaya 60115 Indonesia
2Department of Marine, Faculty of Fisheries and Marine, Universitas Airlangga, Surabaya 60115 Indonesia
3Department of Aquaculture, Faculty of Fisheries and Marine, Universitas Airlangga, Surabaya 60115 Indonesia
4Department of Aquaculture, Faculty of of Agriculture, Fisheries, and Biology, Bangka Belitung University, Bangka Belitung, Indonesia
5Department of Marine Science, Faculty of Agriculture, Fisheries, and Biology, Bangka Belitung University, Bangka Belitung, Indonesia

3Corresponding author: sapto.andriyono@fpk.unair.ac.id

Abstract. Kurau Village is one of the potential villages to become one of the centres of fishery production. These processed products are a mainstay that provides income for the fishing community of Kurau, apart from fresh fish products. The types of products that can be found at the Curve Barat souvenir centre are amplang and getas. This study, the purpose of this study was to determine the proximate content of food ingredients produced by fisheries in the form of amplang and brittle produced from community groups in Kurau Village, Central Bangka Regency Bangka Belitung. This information becomes essential in food products that must be included in the packaging of amplang and getas products. There are three amplang products (squid amplang, squid ink amplang, and crab egg amplang) and one shrimp getas tested proximately. The test results showed that all of these products only had a protein content range of 2.79-3.53%, fat 2.41-3.93%, and the highest proximate content was BETN (Nitrogen-Free Extract Material). Nevertheless, these snacks are MSE (Medium and Small Enterprises) products that can be a driver of economic activity in Kurau village. However, attention to the nutritional value conveyed on the packaging must continue to be developed to provide an understanding of the value of processed fishery products.

1. Introduction
Processing of fishery products is an effort to increase the value of the quality of fishery products that have unique characteristics when compared to livestock products. Fishery products in the form of fish are not able to last longer and experience quality deterioration over time with poor storage methods [1]. With good storage technology [2], some fishery products can last a long time and are currently one of the mainstays of the country's foreign exchange because most marine fishery products are oriented to the international market [3]. Regarding processing, a number of fishery products that have low economic value can be changed by adding a number of other food ingredients to form processed products [4] [5] [6] that are easily accepted by
various strata and the general public. In the types of snacks and snacks, fishery products have been found in Central Bangka Regency in the form of brittle, amplang and fish crackers [7] [8] [9].

The Province of the Bangka Belitung Islands is geographically located at coordinates 105°–108° East Longitude and 03°30” South Latitude which is to the east of South Sumatra Province, which was previously the parent province of this archipelago province. This province has a total area of 81,582 Km² covering the two Big Islands of Bangka and Belitung Island, including a land area of 16,281 Km2 and a sea area of 65,301 Km² (BPS Prop of Bangka Belitung Islands 2019). This opportunity shows the enormous potential of the fisheries sector in supporting the acceleration of development in this young province. The aquaculture sector is reported to be able to produce a total of 1,316,000 kg of fish per year or with a conversion value of IDR 17,160 billion/year. However, the potential of the product processing industry also needs to be considered. One of the most well-known processed products is pempek fish (typical of Palembang) which is also widely found in this area. However, other products that have become typical of the Bangka Belitung region are snack products such as brittle, amplang, and fish crackers which are produced from a number of areas, one of which is West Kurau Village.

West Kurau Village, Koba District, Central Bangka Regency has a very strategic location (BPS Central Bangka Regency 2020). This area is about 20 km from the center for the development of reliable human resources in this province, namely the Bangka Belitung University Campus in Balunijuk. This village is inhabited by about 2,777 people along the main road and several villages are located in the coastal and estuary areas where 70% of the population are fishermen from the Bugis tribe [8]. With the majority of villagers working as fishermen, this village develops processed fish products as the mainstay of its economic activities. Raw materials in the form of marine fish are very easy to obtain, especially small fish (runcah) which are the main raw materials for the manufacture of processed fishery products in this region. Capture fisheries activities, which are very dependent on natural conditions, become an obstacle for the development of this business, especially in supplying fish raw materials in the home industry of processing fishery products. Although freshwater aquaculture activities in the community around the area are developing, they have not been able to supply the shortage of raw materials due to strong traditions that do not like consuming freshwater fish.

Community service activities carried out on this occasion, we conducted an analysis of community processed products in Kurau Barat Village, Koba District, Central Bangka Regency. This analysis focuses on product diversification, packaging, and labeling which are expected to provide information and at the same time provide added value for consumers. Analysis of the processing of fishery products was carried out on the Ewaki group, and business voters, Mr. Andreas Maulana, were very welcoming. From this activity, it is hoped that there will be input and suggestions in product development in the form of information on nutritional values on labels and at the same time providing input on informative and attractive label designs.

2. Material and Method

The method used in writing this article is observational and descriptive research. This method is carried out by describing the fishery product processing activities carried out in the study area and providing direction and input in accordance with the development of fish-based processed products which are currently developed and adapted to product quality application standards.

In addition, we also add a SWOT analysis in the development of processed fishery products, as part of an effort to analyze the obstacles and problems found when carrying out processed product development activities. Interviews with a number of business actors in the discussion sessions during the extension were conducted to collect information related to matters that can be used as material in the preparation of a SWOT analysis. By conducting this SWOT analysis, it is hoped that internal and external factors can be identified and can develop strategies for future development.
This community service activity was carried out from July-September 2020 in Kurau Barat Village, Koba District, Central Bangka Regency, Bangka Belitung Province. This activity is in partnership with the “Ewaki” community group and the community service team, Department of Aquaculture, Faculty of Agriculture, Fisheries and Biology, University of Bangka Belitung. In addition to outreach activities, other activities are training on product processing made from catfish which is currently not widely used. In this research report, the study will focus on the results of the proximate analysis of four processed products, namely 3 types of amplang and 1 type of brittle (shrimp brittle).

3. Results and Discussion

3.1. Proximate Analysis of Fisheries Products

The results of the proximate test products are shown in Table 1.

| No. | Sample Code | Water Content (%) | Ash (%) | Protein (%) | Fat (%) | NFE (%) | ME (Kcal/g) |
|-----|-------------|------------------|--------|-------------|---------|---------|-------------|
| 1.  | GU          | 8.23             | 3.91   | 2.96        | 2.41    | 81.33   | 3266.49     |
| 2.  | TC          | 5.60             | 2.21   | 2.79        | 3.93    | 82.12   | 3404.52     |
| 3.  | AC          | 7.19             | 2.91   | 2.95        | 2.82    | 82.26   | 3331.58     |
| 4.  | TK          | 6.73             | 2.59   | 3.53        | 2.43    | 82.34   | 3327.00     |

3.1.1. Water Content. The water content indicates the amount of water contained in the product. As listed in Table 1, the water content of GU, TC, AC, and TK were 8.23%, 5.60%, 7.19% and 6.73% respectively. The water content of the three products can be said to be in excess of the limit according to SNI 7762-2013 regarding amplang product, which is a maximum of 4.0%. In a similar study, the water content of various types of fish crackers in Indonesia ranged from 9.37% to 1.83% [10]. The lower level of water content in fish crackers will raise the other macronutrient content (protein, fat, ash) [11].

3.1.2. Ash Content. Ash content is known as mineral elements or organic substances. Ash is one of the components in food, this component consists of minerals such as calcium, phosphorus, sodium, and copper [12]. As listed in Table 1, the ash content of GU, TC, AC, and TK were in a range of 3.91%, 2.21%, 2.91%, and 2.59% respectively. The ash content of the four products are in accordance with the National Standard of Indonesia (SNI 7762-2013) which is a maximum of 5%. Other similar research showed that the ash content of fish crackers were ranged from 3.39% to 5.94%. The species of the fish added to the mixture will provide the difference macronutrient contents [10].

3.1.3. Protein Content. Protein content is a chain of amino acids needed by the body. Protein has an important role in growth [13]. As listed in Table 1, the ash content of GU, TC, AC, and TK were 2.96%, 2.79%, 2.95%, and 3.53%. The protein content of these products are in accordance with the National Standard of Indonesia (SNI 7762-2013) which is a maximum of 7%. Similar products in previous studies, the protein content contained in fish crackers were in a range of 3.23% to 10.89% [14].
3.1.4. Fat Content. Fats are a type of lipid consisting of trimesters of glycerol and fatty acids or triglycerides. Fat is a more effective source of energy than carbohydrates. One gram of fat or oil can provide 9 kcal of energy. Fat also acts as a source of calcium and energy [14]. As listed in Table 1, the ash content of GU, TC, AC, and TK were 2.41%, 3.93%, 2.82%, and 2.43%. This percentage is in accordance with the National Standard of Indonesia which is a maximum of 35%. It is not much different from the research of [15] which ranged from 1.27 to 3.01%. The difference type of fish used in making fish crackers will provide different fat content of the products [16].

3.1.5. Nitrogen Free Extract. The Nitrogen-Free Extracts of from GU, TC, AC, and TK obtained from the Mamuju Traditional Market were 25.22%, 21.06%, 31.28%, respectively. Non-Nitrogen Extract Materials contain starch, hemicellulose, lignin, pectin, and other substances [17]. Nitrogen-Free Extract represents the non-structural carbohydrates such as starches and sugars and is found by difference.

3.1.6. Metabolizable Energy (ME). ME on samples of TR, TB, and UR obtained from the Ewaki Community Group in Kurau Barat Village were 3266.49, 3404.52, 3331.58, and 3327.00 gr/Cal, respectively. Metabolizable Energy (ME) is the net energy that remains after loss of fecal and urine energy and is the energy available for growth or reproduction and to support metabolic processes such as work (mobility) and respiration (thermoregulation, maintenance metabolism, HIF) [18].

3.2. SWOT Analysis

Community service activities carried out by the Faculty of Fisheries and Marine Affairs, Universitas Airlangga, in collaboration with the Faculty of Agriculture, Fisheries and Biology, University of Bangka Belitung were successfully carried out. With the theme of increasing the added value of aquaculture products, we introduce the importance of processing fishery products to maintain the quality of fishery products and at the same time increase the selling value by making processed products, for example in the form of fish nuggets (Figure 1.). This activity is well received and the hope of the community that it can be developed as an alternative business in the midst of a pandemic condition that requires creativity in business breakthroughs at home while maintaining health. In this activity, we also conduct intensive visits and discussions about processed products that have been developed and are commercially produced by the community. We visited the Ewaki community group in Kurau Barat Village, Central Bangka Regency.

A number of products have been produced by the Ewaki business group, namely amplang, brittle, and crackers. Cracker products do not have specific characteristics compared to other regions, so they will not be presented in this report. Meanwhile, processed brittle and amplang products are unique because they use alternative raw materials from non-fish sources, namely squid and shrimp, even squid and crab eggs can be used as flavorings because the aroma of these products is quite strong.
Figure 1. Submission of material on the processing of fishery products and at the same time the introduction of modern processing in the form of fish nuggets.

At first, the processed products of the Ewaki community used pepetek fish obtained from local fishermen in certain seasons. Due to the limitations of raw materials in certain seasons, the use of alternative raw materials has begun to be applied and is gaining acceptance by local consumers. In general, people are unable to distinguish the taste of processed products from fish and non-fish raw materials. This is very important with the inclusion of a label on the product.

Figure 2. Amplang products (Squid Ink, Crab Eggs and Squid) and Prawn Brittle.

Based on the analysis of the packaging used, manufacturers prefer to use only primary packaging by using packaging made from plastic, although the recommendation to reduce the use of plastic is echoed for various reasons. Processed products like this are still unable to use packaging other than plastic that can maintain quality for a certain period of time. Research on storage time and nutritional quality need to be done and we are currently working on proximate analysis of brittle products and amplang products. Proximate information includes protein, carbohydrates, and fats, which are expected to provide information about the nutritional adequacy rate per 100 grams of consumers who enjoy it. This information is actually required to be provided on labels and packaging of food products in addition to information on the product being halal (from MUI) and information on the expiration date of this food product. Based on the conditions that we found, the information has not been fully implemented due to limitations in the lengthy management and administration and requires a fee for obtaining the permit.
The SWOT analysis carried out from community service activities in the village of Bukit Dempo, Belinyu District, Bangka Regency is focused on providing positive advice in the development of freshwater fisheries in Bangka (Table 1).

Table 2. SWOT Analysis of Aquaculture Activities in Bangka Belitung Province.

| SWOT Component | Description | Strategy |
|----------------|-------------|----------|
| **Internal Factor** | | |
| Strength | - Supporting marine fish raw materials. | - Potential water areas. |
| | - High interest in consuming processed fish products in the form of snacks. | - Existing processed fishery products (brittle, crackers and amplang). |
| | - Human resources for business development are available. | - UBB produces a reliable Bachelor of Fisheries and Agriculture (agribusiness). |
| Weakness | - The stigma of consumption of freshwater fish is still relatively low compared to marine fish so that processed products made from raw freshwater fish are relatively non-existent. | - Carrying out modern processed products in the form of nuggets, surimi, etc. with raw materials of marine fish and freshwater fish. |
| | - Processed fishery products are still in the form of dry snacks (crackers, amplang, dang etas). | - Provide training in the world of work and entrepreneurship for graduates of fishery graduates so that they are ready to enter the community. |
| | - Labels and product information are still very simple and the possibility of product quality does not have a long shelf life. | - Need improvement and a touch of technology and graphic design in making labels and packaging that can maintain product quality. |
| **External Factor** | | |
| Opportunity | - Bangka Belitung Province is very open with supporting land, sea, and | - Smooth land, sea, and air transportation allows optimal |
The results of the SWOT analysis are expected to provide input to the fishery product processing business groups in this region to pay more attention to product quality and packaging which also has an impact on selling prices. Assistance by the local government for the MSME group is very necessary as well as a component that plays a role in driving the economy and supporting the tourism sector in Bangka Belitung Province. The weighting of each component and finding the best solution is expected to be carried out together in stages [19] related to processed fishery products which are expected to be typical souvenirs for tourists visiting Bangka Belitung. The synergy between elements of academics (University of Bangka Belitung) and related agencies needs to be carried out to encourage MSMEs to apply food safety standards so that the products produced really become superior quality fishery products. The activities of the Faculty of Fisheries and Marine Affairs, Universitas Airlangga, which collaborate with regional universities, are expected to provide a bridge in the cooperation program in developing fishery human resources in the Archipelago Province so that educational and research activities related to the fisheries sector become the leading sector of the province of Bangka Belitung.
4. Conclusions
The activity of analyzing the potential of processed fishery products in West Kurau Village in supporting the increase in consumption of fishery products in the Province of the Bangka Belitung Islands has been carried out. In the analysis of processed products, we conclude that there is a need for quality and packaging improvements. Quality improvement is carried out to maintain fish nutrition contained in the processed product, while the packaging is carried out to maintain product quality during storage for a certain period of time. In addition, the addition of information on nutritional values, expiration dates, and halal labels is absolutely added. On this occasion, the support of academics and related agencies to provide assistance is very much needed. The activities of Bangka Belitung University students and lecturers can play an important role in supporting quality fishery products in the future.

5. References
[1] Lemae L, Lasmi L 2019 OCTOPUS: J Ilmu Perikanan 8 20–26
[2] Irianto H E, Soesilo 2007 Dukungan teknologi penyediaan produk perikanan in Seminar Nasional Hari Pangan Sedunia
[3] Ijong F G, Berhimpon S, Sumampow O J 2015 J Ilmiah Tindalung 1 1-6
[4] Karina AG 2019 Profil Nugget Berbahan Baku Fillet Ikan Rucah Lamongan (Repository: Universitas Jember)
[5] Noviansyah E 2019 Kajian Formulasi Tepung Ubi Jalar Kuning (Ipomea batatas L) dan Tepung Tapioka Terhadap Karakteristik Sifat Organoleptik dan Kimia Nugget Ikan Rucah
[6] Nugroho H C, Amalia U, Rianingsih L 2019 J Ilmu dan Teknologi Perikanan 4 47-55
[7] Bidayani E, Syarif A F 2017 J Pengabdian Kepada Masyarakat Universitas Bangka Belitung
[8] Justiani N A, Zamhari Z, Manullang R R 2019 Jurnal Progresif Manajemen Bisnis 6 236-247
[9] Riyani L 2019 Analisis orientasi pasar dan orientasi kewirausahaan terhadap keunggulan bersaing (studi kasus pada UMKM getas Kurau Barat, Bangka Tengah) Universitas Bangka Belitung.
[10] Huda N, Ang Lie L, Chung Xian Y, Herpandi 2010 J of Food Agro Industry 3 473-482
[11] Afrila A, Budi S 2011 J Ilmu dan Teknologi Hasil Ternak 6 1978-0303
[12] Daeng R A, Laitupa I W 2020 Jurnal Biosaintek 2 1-8
[13] Gardjito M, Rauf R, Hendrasty H K, Salfarino R, Septiani R, Kurniasari M, Amaliah Y R, Swasti R N, Fajariyah A 2009 Pengelolaan Pangan dan Gizi (Yogyakarta: Pusat Kajian Makanan Tradisional Universitas Gadjah Mada)
[14] Mario D, Buchari D, Sumarto S 2015 J Online Mahasiswa Fakultas Perikanan dan Ilmu Kelautan Universitas Riau 2
[15] Zulfahmi A N, Swastawati F 2014 J Pengolahan dan Bioteknologi Hasil Perikanan 3 133-139
[16] Kurniawati C P 2013 UAJY
[17] Maynard L 1940 Journal of the Association of Official Agricultural Chemists 23 156-161
[18] Costa D 1999 Journal The Biology of Marine Mamals 176-217.
[19] Rangkuti F 1998 Analisis SWOT teknik membedah kasus bisnis (Jakarta:Gramedia Pustaka Utama)
6. Acknowledgements
The author expresses his deepest gratitude for the initiation of cooperation in community service activities for the national community RKAT 2020 No. 532/UN3/2020 Faculty of Fisheries and Maritime Affairs Universitas Airlangga (Surabaya) together with the Community Service Team from the Faculty of Agriculture, Fisheries and Biology, University of Bangka Belitung (Bangka) who have provided important activities for delivering appropriate technology for people in Bangka. We would also like to thank Mr. Andreas Maulana, the owner of the Bahek Ewaki trademark with a variety of processed products made from pepetek fish, who is willing to provide information and documentation of the production process.