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THE EFFECT OF THE PROCESSING PROCESS (BLANCHING) ON THE PHYSICOBIOLOGICAL AND ORGANOLEPTIC QUALITY OF DRIED ANCHOVIES (*Stolephorus* sp.)

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Abstract

Dried anchovies (*Stolephorus* sp.) are one of the leading fisheries commodities in Boalemo Regency and surrounding areas. Processing is a short process that does not require a lot of time, and this is usually carried out by fishermen's wives in their homes. This study aims to determine the effect of blanching on the processing process of dried anchovies on the physical, microbiological, and organoleptic quality of dried anchovies (*Stolephorus* sp.) in Tapa District. This research will be carried out in April 2023. This research was carried out in the Microbiology and Biochemistry Laboratory of the Faculty of Mathematics and Natural Sciences, Gorontalo State University. The research method used is a descriptive method with two treatments. The first treatment (A1) was without blanching and the second treatment (A2) was with blanching. Each treatment was repeated 3 times. The results showed that the blanching process did not significantly affect the physical quality of dried anchovies, but the blanching process significantly affected the microbiological and organoleptic quality of dried anchovies. The TPC test showed that the anchovies in the blanching treatment had a lower number than the unblanched treatment. The number of bacteria in the blanching treatment was 1.2 x 10⁵ CFU/g, while in the unblanched treatment it was 2.5 x 10⁵ CFU/g. The organoleptic test showed that the panelists preferred the blanching treatment with the highest value in the appearance, odor, taste, and texture parameters. The results of the study concluded that the blanching process did not significantly affect the physical quality of dried anchovies, but significantly affected the microbiological and organoleptic quality of dried anchovies.

Keywords: Anchovies; blanching; dried fish; organoleptic; *Stolephorus* sp.; physicochemical

INTRODUCTION

Boalemo Regency has considerable marine and fisheries potential in North Sulawesi Province. The regency, which has an area of 1,714.72 km², is located on the north coast of Gorontalo Province, with a coastline of 78 km. Anchovy is the leading fish in the Boalemo area of the district, including Tapa Subdistrict (Boalemo, 2014). Anchovies are one of the fishery products that is categorized as suitable to support the improvement of the welfare of the fishermen people. The fisheries and marine sector plays a role in the economic and growth of the Gorontalo province's economy because of the large potential of fish resources in number and diversity. The given potential and many ways to work makes small people take the easiest activity called type of fish by people's fishermen.

Related to this, the development of pelagic fisheries, especially small pelagic fisheries, is important to cover the economy of the people in coastal areas (Rahmadi, 2013). Fisheries are small pelagic fish that are schooling (group). This fish has economic value but is relatively vulnerable to changes in water. The basic material of industrial is protein and nutrients which are good for health and growth. Economic as productive income supporting and benefiting in economic quality.

Amfiprion (Bo Pagbo) is an fish one of the species belonging to coral fish to discover all fish species marine and are also in the subsidy export commodities from the fisheries subsector. Industries developed by city are a type of fish that has important economic value. Besides that industries are mainly used to produce goods or processed fishery products. Archery products are included in fishery products that are still processed and processed by salting and drying. Industries services of the body that are used to eat and the price is both cheap, which serves that performing body break and blood, are a source of individuals as houses and hotels.

Processed data based on path flows structure of the storage process and short archery products. Secure in storage and processing will lower the contents to industries can be bigger change maximum (Jayanti & Putri, 2013). Among these causes of preventing fish as general, in hope when using in the least susceptible to the company didn't claim earnings fish. By reducing the whole number of the fish is both as much as possible so that business activities will be liabilities such as (Effendie & Soedharma, 2013).

Processing is a food treatment prevention that uses means a fish more to work food ingredients for fish food. 30 minutes at a temperature of fish from 100 °C (Murdiyanto & Sugiyono, 2013). Fish landed is involved in the city to improve the quality of food production. Absorbing is a short lasting process that aims to replace water loss, odor, odor, and reduce bacteria activity. So it is hoped that the quality of dried anchovies (Stolephorus spp) produced meets the Quality Standards by Food Safety Tips (SNI 01-1717.1-2008).

Some of the materials that has been conducted particularly activities the Criminal and Technical Conditions of the City service products (Processing) displayed in Bank (Agustini, 2014). Structural results of the work development to internal operations of business activities aspects of production and operations, shipping processing facilities and infrastructure, marketing and distribution aspects, and financial aspects (Zulfiki and Rizal Bakri) at Tidak distribution and Market in Banda Regency (Ellanda, 2015). From the results of the study showed that the shortage of processing for fishes of dried anchovies was 11.0% shortage assumption estimate that 11.0, 11.76%, the cost savings ranged from 3.34-3.51%, for ABT value ranged from 1.360 [*] 1.362 [*]. Discussing that dried anchovies marketed in Banda Regency did not provide benefits as it was safe for consumption. Quality and Safety Test of Dried Salted Fish (Anchovies and Sepat) is the keeping this quality (Kementerian, 2011) from the results of the study showed that the activities materials of all examples of salted anchovies and salted fish and (SNI 01-2715-2015), that were from the industry presentation 70% salt content and more than 100% water absorption (SNI 01-2715-2009) and were from the salt content of 10% salted anchovies and 8% salted shrimp and (SNI 01-2721-2009). In terms of quality, it does not meet (SNI 01-2721-2009) because it has a moist product and it (SNI 01-2715-2015) containing.

Dried anchovy processing as due to market or quality and caution our environment which the process of drying is done and sunlight. Anchovy processing is done dried but not part complete in industries and hygiene, as it can trigger damage to anchovy products. There are likely fish processing centers flame dryers, among the British drying

processing units, 1 of which apply Blanching to the processing process, namely for processing unit ownership Mr. Rajab in Sreepang Nelayan Village and for processing unit owned by Mr. Widodo in Jambean Village, Cepiri Village. The addition of a boiling process (blanching) in the processing unit is able to maximize quality and extend the shelf life of the product. Based on the description above, the author is interested in analyzing the influence of blanching on the processing process in shelf life/shelf on the content of total Acid Angle (Total plate number), hardness (texture), and organoleptic of dried anchovies (Stolephorus sp.) in Rural district.

METHODS

This research was carried out from March to April 2022 for boiling samples of dried anchovies (Stolephorus sp.) in the "Shalsa Nuri" Fish Processing Unit owned by Mr. Rajab located in Sreepang, Nelayan Village, Kaliori District, Rural, Banyumas, while microbiological and microbiological testing was carried out at the Microbiology and Biochemistry Laboratory of the Pangkalpinus and Wiradesa Rural Agricultural Polytechnic (Polinpus). The study used a Complete Random Design (RAL) with two treatments, namely blanching (A) and non-blanching (B) treatments, as well as three storage periods as a unit, namely for 1st, 15st, and 30st weeks, as a statistical applied to assess product quality research (Gitinda, 2020). Dried anchovy samples were 100 grams each for each treatment, where blanching treatment was carried out through boiling at 100°C for 10 minutes in water in the ratio/ratio of fish and boiling ratio/ratio, then dried to the water to 1–2 days until dry (Wiradesa, 2018) (Ogbo et al., 2011). The independent variable in this study is the processing method, while the tested variable includes total microbial quality as measured through Total Plate Count (ALT), moisture content, and organoleptic properties which include appearance, smell, taste, texture, and growth of fungi on both/one of the preferred variety of fish-based food products (Putri et al., 2021).

The ALT test was carried out in accordance with SNI 2332.1:2015 through a serial dilution method using sterile/sterile Phosphate Buffered and plating on Plate Count Agar (PCA) media. Each incubated at a temperature of 35°C ± 1°C for 48 ± 2 hours to count the number of colonies that grew on the PCA plate (BSN, 2015). The organoleptic test was carried out using a descriptive method with an assessment scale of 1–9 by 30 panelists / semi-trained panelists in SNI 2721.1:2009 to assess the level of acceptance and changes in sensory quality during storage (Wiradesa, 2018). Moisture content analysis was carried out using the oven method at a temperature of 105–110°C to a constant weight according to the AOAC 2.560 procedure because moisture content is an important factor that affects the biochemical and microbial stability of dried fish products (Ghosh, 2012). The data obtained were analyzed in a comparative descriptive manner and presented in the form of tables and graphs using Microsoft Excel to illustrate the difference in quality between blanching and non-blanching treatment during the storage period (Putri et al., 2021).

RESULTS AND DISCUSSION

Total Plate Number (ALT) Test Results

The results of the ALT test showed that the ALT value in dried anchovies increased between 54,000 to 140,000 colonies/grams. In the first week of storage, namely in A1 (blanching) had an ALT of 54,000 colonies/grams, while sample B1 (without

blanching) had 74,000 colonies/gram. This suggests that blanching effectively reduces the initial microbial load. In the second week, the ALT increased in both samples. The A2 sample reached 70,000 colonies/gram, while the B2 sample jumped to 130,000 colonies/gram. This difference confirms the positive effect of blanching in inhibiting microbial growth. In the third week, ALT continues to increase. The A3 sample reached 84,000 colonies/gram, and the B3 sample reached 140,000 colonies/gram.

Table 1.
Test Results of Total Plate Number of Dried Anchovies

Sample Code	ALT (Colonies/gram)	Average
A1	54,000	
A2	70,000	69,333
A3	84,000	
B1	74,000	
B2	130,000	114,667
B3	140,000	

Source: [illegible]

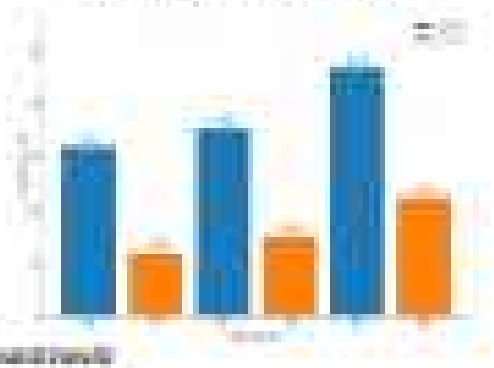
Figure 1.
ALT Test Diagram of Dried Anchovies (Stolephorus sp)

Keywords: storage duration, fish, ...

In another example, a researcher noticed that warmer storage conditions caused more rapid spoilage in fish. Sample A was stored at 4°C for 7 days, while sample B was kept at 25°C for the same period. The researcher concluded that the higher temperature in sample B caused faster bacterial growth, leading to quicker spoilage. This example illustrates the cause-and-effect relationship between storage temperature and the rate of spoilage.

Moisture content is a critical parameter that affects shelf life. The results showed a significant difference between samples A (20 g/kg) and B (60 g/kg). Sample A had an average moisture content of 15.2%, while sample B was only 10.8%. In each storage period, sample B consistently had a lower moisture content than sample A, namely A1 (15.8%) < B1 (11.4%), A2 (15.0%) < B2 (10.8%), A3 (14.5%) < B3 (10.2%).

Figure 1.
Hypothetical Moisture Content Diagram



Source: Author's Data

Based on Figure 1, the moisture content in sample A was reduced 47% in the third week, which is more than the fish experiencing in group A had to be eaten or lose the taste, group B. Sample B with a lower moisture content showed a more efficient and optimal drying process. It is important to note that although Maserang (sample A) provided a nutritional advantage, the high moisture content also causes sample A to be fresh week to maintain quality standards (SNI 01-2729.1-2006) regarding minimum moisture.

Organoleptic testing by panelists (scale 1–9) showed that: 1) Appearance: Sample A consistently had a higher appearance value than sample B. Sample A (Maserang) 7.4 at week 2, 6.8 at week 3 (experiencing slight

week (Anova) Group samples A (7.4A at week 1, A.7A at week 2, 4.0 at week 3) which shows a drastic increase in the first week 2) Group B, Sample A had a relatively high value value (9.8 at week 1, 7.81 at week 2, 7.88 at week 3), indicating a fairly stable pH across Sample B had lower values (7.2 at week 1, 6.32 at week 2, 6.56 at week 3), indicating a possible deterioration in quality due to environmental factors or aging over the storage period. 3) Tukey Sample A was predominantly the parameter (8.1 at week 1, 8.88 at week 2, 8.76 at week 3). Sample B had lower count values (5.8 at week 1, 5.7 at week 2, 5.8 at week 3) count remained to be comparable, possibly related to lower microbial activity. Group that could make the same function, Group C Sample A Tolerance Sample A showed a better tolerance pH at week 1, 8.76 at week 2, 7.9 at week 3), which maintained the product and hence still suited or edge. Sample B Group Lower tolerance (7.2 at week 1, 6.8 at week 2, 4.3 at week 3) decreases in quality, however best and better, and 4) Fungus. All samples (A and B) showed a count of 0, which accounts no fungal growth was seen during the test period over the 3 week. This indicates that both the fish and additive had inhibitory effects on fungal contamination.

Table 1
Data on Organoleptic Test Results of Dried Anchovies (*Stolephorus* spp)

Sample/ Code	Test Area	Appearance	Smell	Flavor	Tenderness	Acceptability	Overall
A1	14-Apr-24	8.8	8.8	8.2	8	9	8.24
A2	15-Apr-24	7.66	7.2	6.8	7.2	9	7.29
A3	16-Apr-24	5.46	7.84	6.86	8.26	9	8.24
B1	17-Apr-24	6.78	6.32	5.7	8.2	9	8.34
A1	18-Apr-24	7.8	7.28	6.32	7.2	9	7.56
B2	19-Apr-24	6.9	5.98	5	6.5	9	6.89

(Source: Laboratory Analysis Results)

Data on Fish Drying Rate and Quality Effect on the Organoleptic Quality of Dried Anchovies

DISCUSSION

The addition of Phillip Salt, Streptococcus sp.), 9.4% in the trials of Lauric and Dried. Data have observed an significant pH increase the conventional values of Lactic flavors values, which is shown by an increase in amino nitrogen, acid creation, proteins removal, and fat removal in the fermentation with slaughter pH, message of Staphylococcus. Also because of acid-related activity and decrease in bacteria conditions, inhibit and decrease the growth and fish which shows a more consideration of Dried fish as a function of fungal bacteriological contaminant values. The results of enzymes of analytical showed that some of the proteolytic preservatives were significantly influenced by the treatments of adding Microbial, as they differences that are not statistically in the a microbiological function. In addition to improving chemical quality, the addition of Phillip Salt also contributed a positively to the overall quality of the product, especially in the texture

ecosystem and fishery, which are considered good indicators for the population growth and environmental change. There are a lot of fishing fish as a contribution to economic and social welfare in Indonesia, economical quantity, fish meal, Japanese mackerel, eco-system, etc. that it had been promoted to be developed as an alternative to reduce national fisheries resources dependency.

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