

Analysis Of The Quality Of Dried Salted Anchovies Marketed At Baruga Market, Kendari City

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ABSTRACT

Dried salted anchovies are one of the fishery products widely marketed and consumed by the community; however, their quality may vary due to differences in salting, drying, handling, and storage practices. This study aimed to analyze the quality of dried salted anchovies marketed at Baruga Market, Kendari City, based on organoleptic characteristics, moisture content, and salt (NaCl) content. The study employed a quantitative descriptive approach, with dried salted anchovy samples collected from vendors at Baruga Market. Organoleptic evaluation included texture, color, aroma, and physical appearance, while laboratory analyses included moisture determination using the gravimetric method and salt determination using argentometric titration. The results showed variations in organoleptic characteristics among samples, particularly in the degree of dryness, texture, color, and aroma. Moisture content ranged from 39.22% to 57.46%, with a mean of 49.52%, whereas salt content ranged from 4.38% to 12.38%, with a mean of 7.88%. Samples with lower moisture content descriptively exhibited firmer and drier textures than samples with higher moisture content. Analysis of the relationship between moisture and salt content showed a very weak and statistically nonsignificant correlation ($r = 0.130$; $p = 0.807$). Overall, the quality of dried salted anchovies marketed at Baruga Market, Kendari City, varied in terms of physical and chemical characteristics among the samples. These findings highlight the need for greater consistency in salting, drying, handling, and storage practices to maintain product quality.

Keywords: Dried Salted Anchovies; Fish Quality; Moisture Content; Salt Content; Organoleptic Characteristics.

INTRODUCTION

Fish is one of the important food commodities with high nutritional value because it contains protein, essential amino acids, minerals, vitamins, and fatty acids required by the human body. However, fresh fish is highly perishable because its relatively high water and nutrient content supports enzymatic activity and microbial growth. These conditions make postharvest handling and processing essential for maintaining fish quality. One of the commonly applied preservation methods is salting and drying, which aims to reduce moisture content and extend the shelf life of fishery products (Al-Saadi et al., 2023).

Anchovies (*Stolephorus* sp.) are among the fishery commodities widely processed into dried salted products. Their relatively small size allows salting and drying to be carried out using simple processing techniques, enabling the product to be marketed in dried form with a longer shelf life than fresh fish. Nevertheless, the quality of dried salted anchovies is strongly influenced by processing conditions, particularly drying duration, environmental conditions, and the drying method used. Bau et al. (2021) reported that drying duration affects the chemical and biological quality of dried salted anchovies, particularly moisture content and microbiological characteristics.

Moisture content is an important parameter in determining the quality of dried salted anchovies because it is closely associated with product stability during storage. Relatively high moisture content can increase water availability for microorganisms and accelerate chemical reactions that contribute to quality deterioration. Conversely, excessive drying may affect the physical and sensory characteristics of the product. Al-Saadi et al. (2023) demonstrated that drying methods influence moisture content, water activity, drying rate, and the overall quality characteristics of anchovies. Therefore, controlling the drying process is necessary to achieve an appropriate moisture level and produce a stable product during storage.

In addition to moisture content, salt content is an important parameter for determining the quality of dried salted fish. Salt contributes to preservation by reducing water availability and inhibiting the growth of certain microorganisms. However, the salt content of the final product may vary depending on salt concentration, salting duration, fish size, processing methods, and drying conditions. Anupama et al. (2022), in a study of dried salted fish marketed through several retail markets, found variations in moisture and salt content among products. These findings indicate that the quality characteristics of dried salted fish may vary at the retail level, highlighting the need for direct assessment of products marketed within specific regions.

Drying methods are also important factors determining the quality of dried anchovies. Direct sun drying remains widely practiced because it is simple and relatively inexpensive. However, this method is highly dependent on weather conditions, temperature, humidity, and environmental cleanliness. Different drying methods may produce products with different quality characteristics. Savitri et al. (2018) reported that anchovies dried using a covered solar dryer exhibited quality characteristics that could be compared with those of conventionally dried anchovies based on moisture content, organoleptic properties, and microbiological conditions. These findings emphasize the importance of controlling the drying process to produce high-quality dried anchovies.

The quality of dried salted anchovies may also change during storage and marketing. Environmental conditions, particularly temperature and humidity, can influence moisture content, water activity, and the chemical characteristics of the product. Pratiwi et al. (2019) found that dried salted anchovies stored at room temperature underwent changes during storage, including changes in parameters related to moisture content, water activity, and salt content. This condition indicates that product quality is determined not only by processing methods but also by storage conditions and postproduction handling. Therefore, quality evaluation at the market level is important for determining the actual condition of products available to consumers.

In addition to chemical characteristics, the quality of dried anchovies is associated with their microbiological and organoleptic conditions. Products subjected to inadequate drying or improper handling may experience quality deterioration, as indicated by changes in appearance, aroma, texture, and microbial levels. Pontoh et al. (2024) demonstrated that the quality of dried anchovies can be evaluated using microbiological and organoleptic parameters to determine product suitability. Idrus and Karim (2026) also reported that pretreatment before drying can affect the microbiological and organoleptic quality of dried anchovies. These findings further highlight the importance of controlling processing and handling practices throughout the production and distribution of dried anchovies.

Baruga Market in Kendari City is one of the locations where food products, including dried salted anchovies, are marketed to the local community. The products sold at the market may originate from different processing sources, potentially resulting in variations in salting practices, drying duration, storage conditions, and handling during distribution. Previous studies have demonstrated that the quality of dried salted anchovies may vary according to processing methods, moisture content, salt content, storage conditions, and marketing practices. However, information regarding the quality of dried salted anchovies specifically marketed at Baruga Market in Kendari City remains limited. Existing studies have generally focused on the effects of drying technologies, salting treatments, storage conditions, or the quality of dried fish products in other geographical locations. Limited information is available regarding

the quality characteristics of dried salted anchovies at the retail-market level in Kendari City, particularly in relation to the combined assessment of organoleptic characteristics, moisture content, and salt content. This gap is important because products available at the market may have undergone different processing, transportation, storage, and handling conditions before reaching consumers.

Accordingly, the novelty of this study lies in providing a site-specific assessment of the quality of dried salted anchovies marketed at Baruga Market, Kendari City, by integrating organoleptic observations with measurements of moisture and salt content. The study also examines the descriptive relationship between moisture and salt content to provide additional information regarding the chemical characteristics of the marketed products. This approach provides empirical information that can serve as a baseline for understanding variations in dried salted anchovy quality at the local market level and can support recommendations for improving processing, handling, and storage practices.

Therefore, this study aims to analyze the quality of dried salted anchovies marketed at Baruga Market in Kendari City based on moisture content and salt content as the primary quality parameters. Specifically, the study evaluates the organoleptic characteristics of the products, determines their moisture and salt contents, describes variations among samples, and examines the relationship between moisture and salt content. The findings are expected to contribute to the available scientific information on the quality of dried salted anchovies marketed in Kendari City and provide practical information for improving product quality and handling practices at the market level.

METHODS

This study employed a quantitative descriptive approach to analyze the quality of dried salted anchovies marketed at Baruga Market, Kendari City. The study was conducted over a three-month period, including preparation, sample collection, field observation, interviews, laboratory analysis, and data processing. The sampling site was purposively selected based on the presence of dried salted fish trading activities, while chemical parameter analyses were conducted at the Basic Laboratory of Halu Oleo University. Creswell and Creswell (2023) explain that a descriptive quantitative approach is used to provide an objective description of the characteristics of an object based on measurable data. Therefore, this approach was employed to describe the quality of dried salted anchovies based on field observations and laboratory measurements.

The study population consisted of vendors selling salted fish at Baruga Market, Kendari City. Samples were selected using purposive sampling based on the following criteria: vendors actively selling dried salted anchovies, products being available at the time of the study, and vendors being willing to provide information. A total of 15 vendors were selected as sample sources, and two dried salted

anchovy samples were collected from each vendor, resulting in 30 sample units. From these 30 sample units, six representative samples were subsequently selected for laboratory and detailed organoleptic analysis based on product availability, sample condition, and representation of differences observed among the products. The six samples were coded S I, S II, S III, S IV, S V, and S VI. Thus, the six samples reported in the Results section represent the final analytical samples, whereas the 30 units represent the initial sample collection from the 15 vendors. Each sample was placed in a clean container and labeled with a code corresponding to its source to ensure traceability throughout the analysis process. Sugiyono (2022) explains that purposive sampling is a sampling technique based on specific considerations or criteria relevant to the objectives of the study. Accordingly, this technique was used to ensure that the samples represented the characteristics of the research object.

Data were collected through observation, interviews, documentation, and laboratory testing. Observations were conducted to obtain information regarding the conditions of the sales area, environmental cleanliness, storage practices, packaging, and handling of dried salted anchovies. Structured interviews were conducted with vendors to obtain information concerning product sources, storage duration, fish origin, known processing practices, and distribution conditions. Organoleptic evaluation was conducted based on four characteristics: texture, color, aroma, and physical appearance. The evaluation was descriptive and was conducted by the researcher using a standardized observation sheet rather than by a trained consumer preference panel. The assessment focused on observable product characteristics and was not intended to measure consumer acceptance or preference. All field data were recorded using observation sheets and research instruments prepared before data collection. Hardani et al. (2020) state that observation, interviews, documentation, and measurement can be integrated to obtain more comprehensive research data.

Chemical quality analysis focused on moisture and salt content. Moisture content was determined using the gravimetric oven-drying method at 105 °C until a constant weight was obtained. A 2-g sample was weighed and analyzed in duplicate. The two measurements were treated as analytical replicates of each sample, and the mean value was used as the moisture content reported for each sample. Moisture content was calculated as the percentage loss in sample mass after oven drying. Salt content was determined using the argentometric titration method (Mohr method). A 2-g sample was extracted with distilled water, and the resulting filtrate was titrated with 0.1 N AgNO₃ solution using K₂CrO₄ as an indicator. The salt-content determination was performed using the same analytical sample preparation procedure for all six samples, and the resulting NaCl concentration was expressed as a percentage. The moisture and salt contents were expressed as percentages (%). Nielsen (2017) explains that chemical

analysis of food materials should be conducted using controlled analytical procedures to obtain measurement results that can be used to assess food quality characteristics.

Laboratory test results and field observation data were analyzed using descriptive statistics, including minimum, maximum, mean, and standard deviation values, as well as percentages for organoleptic data and product-handling characteristics. The moisture and salt content results were subsequently compared with relevant quality requirements established for dried salted fish products. The quality reference values used for comparison were stated explicitly in the Results and Discussion section together with their corresponding standard or literature source. Observation and interview data were used as supporting information to explain potential differences in quality characteristics among products. Ghozali (2021) explains that descriptive statistics are used to provide an overview of data characteristics through measures such as the mean, minimum, maximum, and data dispersion. Normality of the moisture and salt data was assessed using the Shapiro–Wilk test because of the limited number of analytical samples. The relationship between moisture and salt content was examined using Pearson correlation after consideration of the distribution of the data. Any comparison of variation among samples was interpreted descriptively and statistically with caution because the final number of analytical samples was limited to six. The results were presented in tables and descriptive narratives to provide an overall assessment of the quality of dried salted anchovies marketed at Baruga Market, Kendari City.

RESULTS AND DISCUSSION

Research Results

4.1 General Description of the Samples

This study was conducted on dried salted anchovies marketed at Baruga Market, Kendari City, as one of the processed fishery products evaluated for quality. The samples consisted of dried salted anchovies that had undergone salting and drying before being marketed to consumers. Following the initial sampling process, six representative samples were selected for detailed organoleptic and laboratory analysis. The samples were coded S I, S II, S III, S IV, S V, and S VI. The six samples represented the final analytical units reported in this study. The coding system was used to facilitate sample identification and traceability throughout the organoleptic observations and laboratory analyses. The six samples were analyzed based on organoleptic characteristics, including texture, color, aroma, and physical appearance, as well as chemical parameters consisting of moisture and salt (NaCl) content.

4.2 Organoleptic Characteristics of Dried Salted Anchovies

Organoleptic observations were conducted descriptively to obtain an overview of the physical

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condition of dried salted anchovies marketed at Baruga Market, Kendari City. The observations focused on four main characteristics: texture, color, aroma, and physical appearance. These parameters were directly observed for each sample by considering the overall condition of the product. The observations were conducted by the researcher using a prepared observation sheet and were intended to describe observable product characteristics rather than consumer preference or sensory acceptance. The observations were not intended to measure consumer preferences but rather to describe the physical characteristics of the samples before and after being considered in relation to the chemical analysis results. The organoleptic observations of the six samples are presented in Table 1.

Table 1. Organoleptic Characteristics of Dried Salted Anchovies

Sample	Texture	Color	Aroma	Physical Appearance
S I	Slightly soft, insufficiently dry, and easy to bend	Dull white to yellowish	Characteristic salted-fish aroma, slightly moist	Surface still appeared moist, incompletely dried, with some pieces sticking together
S II	Slightly soft and not yet sufficiently firm	Yellowish white	Characteristic salted-fish aroma, slightly less fresh	Fish bodies were relatively intact but still appeared slightly moist
S III	Firm, dry, and not easily broken	Bright white to silvery white	Fresh characteristic salted-fish aroma, with no rancid odor	Clean and evenly dried surface, not sticky, with intact fish bodies
S IV	Relatively firm and sufficiently dry	Bright, slightly yellowish white	Characteristic salted-fish aroma	Relatively good appearance, evenly dried, and slightly pliable
S V	Relatively firm but still slightly pliable	Yellowish white	Characteristic salted-fish aroma	Relatively dry surface but still contained slight moisture
S VI	Soft, less firm, and easy to bend	Dull and slightly yellowish	More pronounced salted-fish aroma	Appeared the most moist, with an insufficiently dried surface and some fish pieces sticking together

Based on Table 1, the samples differed descriptively in texture, color, aroma, and physical appearance. Sample III was characterized by a firm and dry texture, bright white to silvery-white color, characteristic salted-fish aroma without a rancid odor, and a clean, evenly dried surface. Sample VI showed a softer texture, duller and slightly yellowish color, more pronounced salted-fish aroma, and a visibly moist surface with some pieces sticking together. The other samples showed intermediate characteristics.

The organoleptic observations were used as descriptive supporting data and were not subjected to statistical significance testing because the assessment was not designed as a panel-based sensory evaluation. The observed characteristics were subsequently considered alongside the laboratory measurements of moisture and salt content.

4.3 Moisture Content of Dried Salted Anchovies

The moisture content analysis of the six dried salted anchovy samples showed variations among the samples. The analysis was conducted to determine the amount of water remaining in the products after salting and drying. Based on the measurements, the highest moisture content was found in Sample VI at 57.46%, while the lowest was found in Sample III at 39.22%. These differences indicate that the degree of dryness was not uniform across all samples. The moisture values reported for each sample represent the mean of duplicate analytical measurements.

Table 2. Moisture Content of Dried Salted Anchovies

Sample	Moisture Content (%)
S I	54.84
S II	52.80
S III	39.22
S IV	44.25
S V	48.54
S VI	57.46
Mean	49.52
Standard Deviation	6.88

Based on Table 2, the mean moisture content of the six dried salted anchovy samples was 49.52%, with a standard deviation of 6.88%. The minimum moisture content of 39.22% was observed in Sample III, whereas the maximum value of 57.46% was found in Sample VI. Sample I had a moisture content of 54.84%, Sample II 52.80%, Sample IV 44.25%, and Sample V 48.54%. Thus, the analysis showed variations in moisture content among the samples, with a range of 18.24 percentage points.

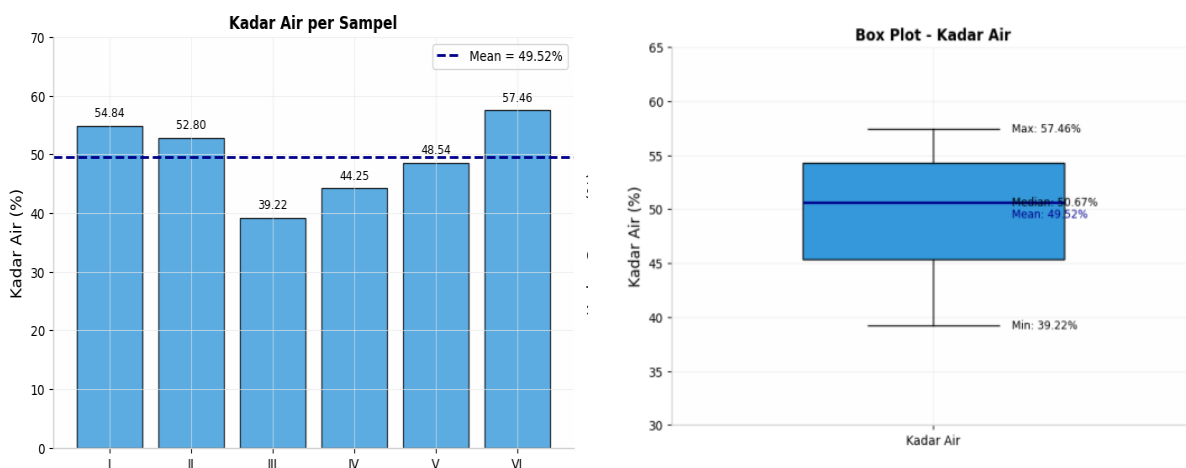


Figure 1. Moisture Content of Dried Salted Anchovies Across All Samples

Figure 1 illustrates the differences in moisture content among the six dried salted anchovy

samples. Sample VI showed the highest value, whereas Sample III showed the lowest. Samples I and II had relatively high moisture contents, while Samples IV and V were within the intermediate range. The numerical pattern indicates that Sample III had the lowest residual moisture, whereas Sample VI had the highest residual moisture among the analyzed samples.

When the test results were compared with the 40% maximum moisture content limit used as the reference in this study, Sample III, with a moisture content of 39.22%, was below the specified limit. In contrast, Samples I, II, IV, V, and VI had moisture contents exceeding 40%. Therefore, based on the moisture parameter, most of the samples had moisture contents higher than the quality limit used as the reference in this study.

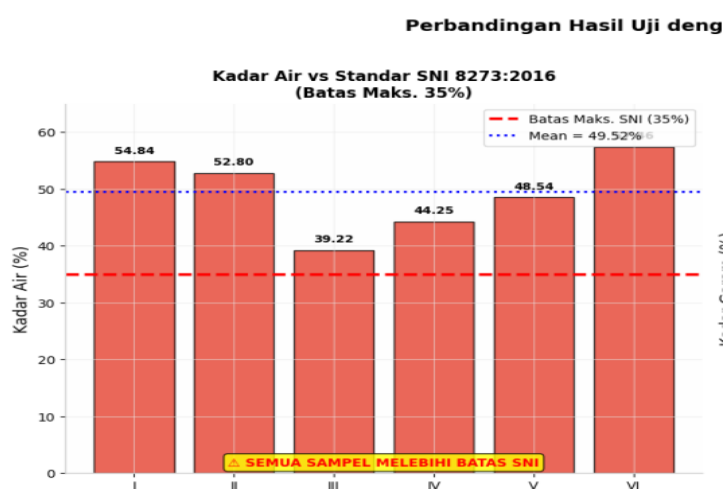


Figure 2. Comparison of Sample Moisture Content with the Quality Standard

The descriptive statistical analysis showed that moisture content had a median value of 50.67% and a coefficient of variation of 13.90%. The median was relatively close to the mean value of 49.52%, while the data ranged from 39.22% to 57.46%. The Shapiro-Wilk test produced a value of $p = 0.815$, indicating that the moisture content data did not show a statistically significant departure from a normal distribution. These data were subsequently used as a basis for statistical analysis and interpretation of the moisture quality of dried salted anchovies.

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4.4 Salt (NaCl) Content of Dried Salted Anchovies

The salt content analysis showed variations in NaCl concentrations among the six dried salted anchovy samples. Salt content was evaluated as one of the chemical parameters to determine the amount of salt remaining in the products after the salting process. Based on the measurements, Sample II had the highest salt content, at 12.38%, whereas Sample IV had the lowest, at 4.38%. The difference between the highest and lowest values indicates substantial variation in salt content among the products examined.

Table 3. Salt Content of Dried Salted Anchovies

Sample	Salt Content (%)
S I	7.43
S II	12.38
S III	9.31
S IV	4.38
S V	6.56
S VI	7.22
Mean	7.88
Standard Deviation	2.72

Based on Table 3, the mean salt content of the six samples was 7.88%, with a standard deviation of 2.72%. Sample I had a salt content of 7.43%, Sample II 12.38%, Sample III 9.31%, Sample IV 4.38%, Sample V 6.56%, and Sample VI 7.22%. Thus, the salt content of all samples ranged from 4.38% to 12.38%. This variation indicates that the salt content of the dried salted anchovies was not uniform among the samples.

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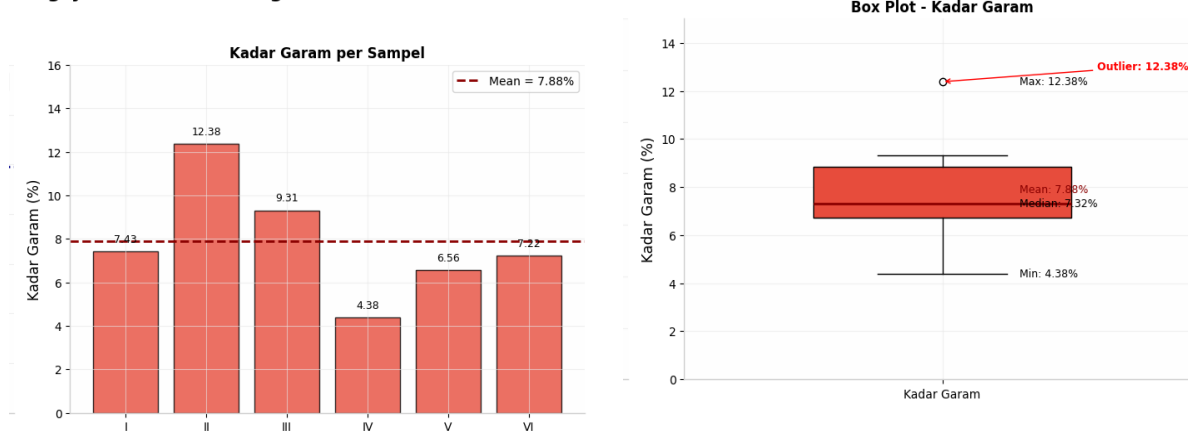


Figure 3. Salt Content of Dried Salted Anchovies

Figure 3 illustrates the differences in salt content among the individual samples. Sample II had the highest salt content, whereas Sample IV had the lowest. Samples I and VI had relatively similar

values, while Sample III was somewhat higher and Sample V was lower. The visualization further demonstrates the variation in salt content among the dried salted anchovy products examined.

When the results were compared with the 10% reference value used in this study, Samples I, III, IV, V, and VI had values below 10%, whereas Sample II had a value of 12.38%. The 10% value should be interpreted strictly according to the quality standard or literature source specified in the Methods section and should not be described as a universal minimum requirement without an explicit regulatory basis.

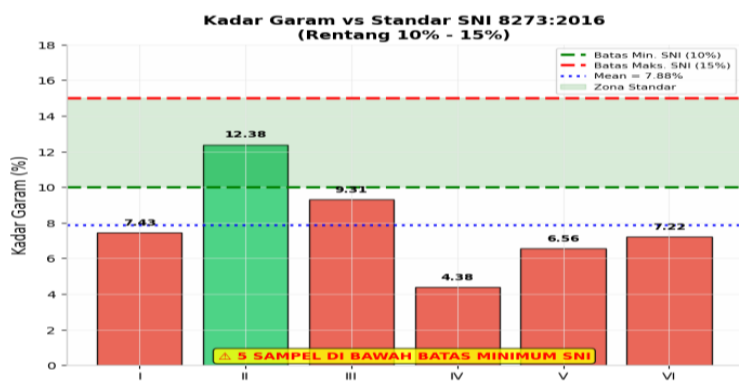


Figure 4. Comparison of Sample Salt Content with the Quality Standard

The descriptive statistical analysis showed that salt content had a median value of 7.32% and a coefficient of variation of 34.49%. This indicates that the relative variability in salt content was greater than that observed for moisture content. The Shapiro-Wilk test produced a value of $p = 0.770$. At the 5% significance level, this result does not indicate a statistically significant departure from normality; however, the interpretation remains limited by the small number of analytical samples.

4.5 Descriptive Relationship Between Moisture and Salt Content

The analysis of the relationship between moisture and salt content across the six samples produced a Pearson correlation coefficient of $r = 0.130$, with a significance value of $p = 0.807$. The correlation coefficient indicates a very weak linear relationship in the study data, while the significance value indicates that the observed relationship was not statistically significant at the 5% level. Therefore, based on the six samples analyzed, changes in moisture content did not show a consistent linear pattern with changes in salt content.

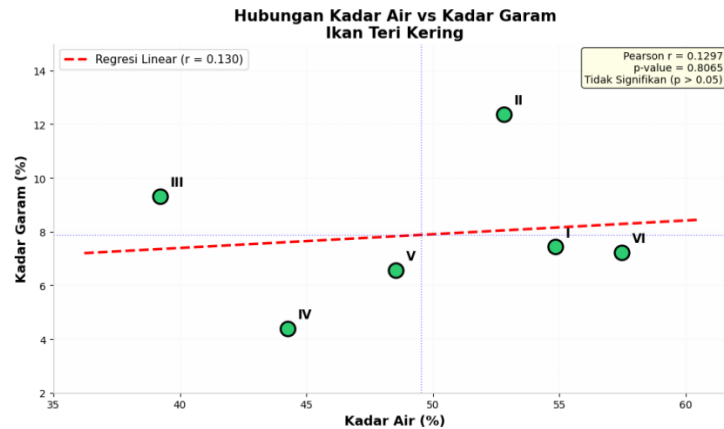


Figure 5. Relationship Between Salt and Moisture Content of Dried Salted Anchovies

Figure 5 presents the distribution of moisture and salt content values across the six samples. The data points were distributed without forming a strong linear pattern. Samples with relatively high moisture content did not necessarily have the lowest salt content, and samples with higher salt content did not necessarily have lower moisture content. The correlation result should be interpreted as a description of the six sampled products rather than evidence of a general relationship applicable to all dried salted anchovies marketed in Kendari City.

4.6 Variation Among Samples

Variation analysis was conducted to examine differences in the chemical parameter values obtained from the six samples. Based on the available analysis, the moisture content parameter produced $F = 1.1945$ with $p = 0.425$, whereas the salt content parameter produced $F = 1.298$ with $p = 0.391$. Both p -values were greater than 0.05, indicating that, based on the analysis applied, there were no statistically significant differences among the sample groups for either parameter.

Because only six final analytical samples were available, the results of these statistical comparisons should be interpreted cautiously. The statistical tests do not establish that the samples are identical in quality; rather, they indicate that statistically significant differences were not detected under the analytical model applied to these data.

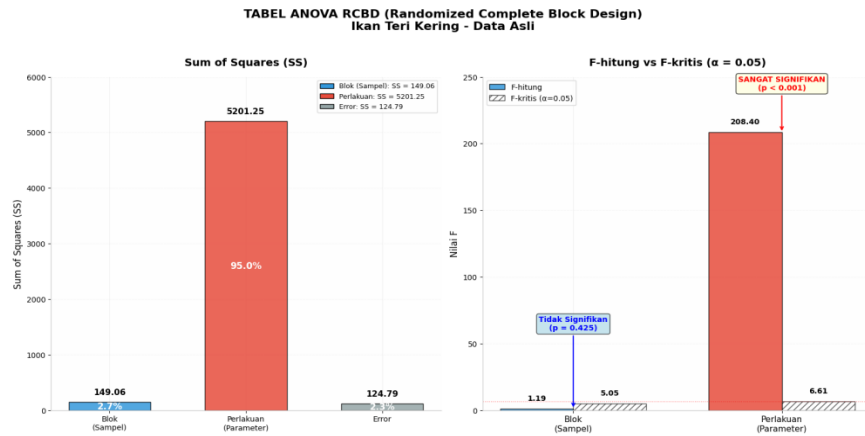


Figure 6. Analysis of Variance of Moisture Content in Dried Anchovies

Figure 4 presents the analysis of variance for moisture content and illustrates the components of variation in the data. The F-value of 1.1945 and significance value of 0.425 indicate that the differences among the analyzed groups did not reach the 5% significance level. Although numerical differences in moisture content were observed, particularly between Sample III and Sample VI, these differences cannot be considered statistically significant based on the statistical test applied.

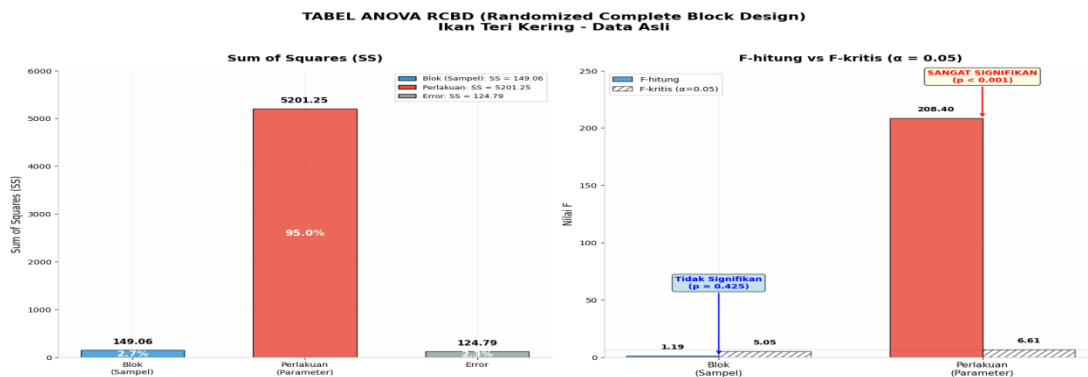


Figure 7. Analysis of Variance of Salt Content in Dried Anchovies

Figure 7 presents the analysis of variance for the salt content parameter. The F-value of 1.298 with a p-value of 0.391 indicates that the differences among the sample groups did not reach the 5% significance level. Thus, although the salt content of Sample II (12.38%) was numerically higher than that of Sample IV (4.38%), the difference was not statistically significant based on the analysis applied. This finding should be interpreted in the context of the limited sample size and the specific analytical structure used in the study.

Overall, the findings showed variations in the organoleptic characteristics, moisture content, and salt content of the six dried salted anchovy samples. Sample III showed relatively favorable descriptive

organoleptic characteristics and had the lowest moisture content at 39.22%, whereas Sample VI had the highest moisture content at 57.46% and relatively more moist physical characteristics. For salt content, Sample II had the highest value at 12.38%, while Sample IV had the lowest at 4.38%. The correlation between moisture and salt content was very weak and statistically nonsignificant. These findings describe the characteristics of the sampled products and provide an empirical basis for the subsequent discussion of possible factors associated with differences in product quality, including salting, drying, handling, and storage conditions.

Discussion

The organoleptic characteristics of dried salted anchovies indicate that processing practices play an important role in determining the physical quality of the final product. Differences in texture, color, aroma, and physical appearance may result from variations in salting, drying, sanitation, and postprocessing handling. Savitri et al. (2018) demonstrated that more protected drying methods can produce dried anchovies with better organoleptic characteristics than traditional drying, particularly in terms of appearance, odor, and texture. Similar findings were reported by Immaculate et al. (2018), who found that drying methods affected the biochemical and sensory quality of anchovies. In the present study, the differences observed among the six samples were particularly evident in texture and physical appearance, with Sample III showing a firm and evenly dried condition, whereas Sample VI showed a softer texture and a visibly moist surface. These observations are descriptive and therefore indicate differences in product condition rather than statistically verified differences in sensory quality. Thus, the organoleptic variation observed in dried salted anchovies at Baruga Market may reflect differences in the effectiveness of processing and product handling before reaching consumers.

Texture is one of the attributes most closely associated with drying effectiveness because the removal of water from fish tissue causes the product structure to become denser. Products subjected to more effective drying tend to have a drier and more compact texture, whereas products retaining relatively high moisture levels tend to be softer and easier to bend. Bau et al. (2023), in a study examining the effect of drying duration on dried salted anchovies, reported that drying duration is an important factor affecting product quality. Daeng et al. (2016) also reported that the use of drying equipment can help maintain the quality of dried salted anchovies during storage. Al-Saadi et al. (2023) further demonstrated that different drying technologies can produce differences in the quality of dried anchovies. This pattern was also evident in the present results, where Sample III had the lowest moisture content (39.22%) and was described as firm and dry, while Sample VI had the highest moisture content (57.46%) and was described as soft and easy to bend. Although this correspondence supports the expected relationship between residual moisture and texture, the present study does not establish drying

conditions as the direct cause because the actual drying duration and environmental conditions were not experimentally controlled. These findings support the view that the textural characteristics observed in this study are closely related to the effectiveness of water removal during drying.

Moisture content is an important parameter for maintaining the stability of dried salted fish during storage. Relatively high residual moisture can make products more susceptible to textural changes and increase the potential for chemical reactions and microbial activity when storage conditions are inadequate. Anupama et al. (2022) found that the moisture content of dried salted fish marketed in several retail markets in Kerala varied according to fish species and season, with some products exceeding the quality reference limit. These findings were also accompanied by variations in microbiological quality, indicating that postharvest handling, storage, and marketing are important aspects of maintaining product quality. Similar findings have been reported for dried salted anchovies in Buru, where product quality was associated with drying methods, sanitation, moisture content, and organoleptic characteristics. In the present study, the mean moisture content was 49.52%, ranging from 39.22% to 57.46%, and five of the six samples exceeded the 40% reference value applied in the study. This result indicates that elevated moisture content was common among the sampled products. However, because microbiological parameters were not analyzed, the present findings should not be interpreted as direct evidence of microbiological safety or contamination. Therefore, controlling moisture content is important not only for achieving desirable texture but also for maintaining product quality stability during marketing.

Variations in moisture content should also be understood as the result of a series of interconnected processes rather than being attributed solely to drying duration. Weather conditions, temperature and environmental humidity, fish thickness, product arrangement during drying, and the ability of the product to reabsorb moisture during storage can all affect final moisture content. Mithun et al. (2021) demonstrated that drying methods and packaging materials influence the quality of dried fish during storage, while improved packaging can help maintain organoleptic characteristics and reduce quality deterioration. Dey Mithun et al. (2024) also reported that dried fish stored under open conditions were more susceptible to changes in color, texture, aroma, and moisture content than products stored in closed packaging under more controlled temperature conditions. The present study cannot determine which of these factors contributed most to the observed moisture variation because information on the exact drying, packaging, and storage conditions of each marketed product was not quantitatively controlled. Nevertheless, the differences among samples suggest that variation may occur along the processing and marketing chain rather than at a single processing stage. Therefore, differences in moisture content

among products marketed at Baruga Market may indicate that drying and storage conditions should be considered as an integrated quality-control process.

Salt content plays an important role in the processing of salted fish because salt contributes to preservation by promoting water movement and reducing water availability within fish tissue. Salt concentration, salting duration, the salt-to-fish ratio, raw material size, and salting method can affect the amount of salt absorbed into the tissue. Putalan et al. (2022) demonstrated that salt concentration and drying duration need to be controlled simultaneously during the production of dried salted fish to obtain desirable product characteristics. Research on dried salted fish marketed in Kerala retail markets also found variations in salt content among products and seasons, suggesting that inconsistencies in salting practices may be one of the challenges in quality control. In the present study, salt content ranged from 4.38% to 12.38%, with a mean of 7.88%. Five of the six samples had values below the 10% reference value applied in the analysis, whereas Sample II had a value of 12.38%. This variation indicates that the salt content of the sampled products was not uniform. However, the observed values cannot by themselves be used to determine the adequacy of the salting process without considering the specific product standard and processing conditions. Thus, the variation in salt content observed in this study highlights the importance of consistent salting practices to achieve greater product uniformity in terms of taste, texture, and shelf life.

The relationship among salt content, moisture content, and organoleptic characteristics indicates that the quality of dried salted anchovies results from the interaction of multiple factors. Theoretically, salting can promote the removal of water from fish tissue through osmotic mechanisms; however, the final condition of the product is also strongly influenced by drying and storage processes. This explains why higher salt content does not necessarily result in the driest or firmest texture. Shiriskar et al. (2010) demonstrated that processed anchovies may undergo changes in moisture content, sensory characteristics, volatile nitrogen compounds, and lipid quality during storage. Other studies of salted anchovies and dried fish products have likewise shown that quality deterioration during storage can be reflected in changes in aroma, color, texture, and sensory acceptability. In the present study, the Pearson correlation between moisture and salt content was very weak ($r = 0.130$; $p = 0.807$). This result indicates that the two variables did not show a statistically significant linear association within the six samples analyzed. The finding should not be interpreted to mean that salt has no role in moisture removal; rather, it suggests that differences in salt content alone did not explain the observed variation in moisture content in this small set of marketed products. Therefore, the weak correlation between moisture and salt content observed in this study is more appropriately interpreted as an indication that these two

parameters did not exhibit a clear linear pattern within the sampled products, rather than as evidence that salting has no effect on water movement.

The statistical comparison also showed no statistically significant differences in the chemical parameters under the analytical model applied, with moisture content yielding $F = 1.1945$ ($p = 0.425$) and salt content yielding $F = 1.298$ ($p = 0.391$). These results should be interpreted cautiously because only six final samples were analyzed. The absence of statistical significance does not mean that the numerical differences among samples were absent; rather, it indicates that statistically significant differences were not detected under the applied analysis. Therefore, the descriptive differences in moisture and salt content remain important for characterizing the sampled products, while broader inference requires a larger and more structured sample.

Overall, the quality of dried salted anchovies marketed at Baruga Market should be understood as the result of interactions among raw material quality, salting, drying, sanitation, packaging, distribution, and storage. Studies of various dried fish products have shown that more controlled drying, appropriate packaging, and proper storage conditions can help maintain organoleptic quality and slow chemical and microbiological deterioration. Mithun et al. (2021) reported that improved drying methods combined with HDPE packaging could help maintain the quality of dried fish during storage, while recent research on anchovies indicates that solar drying can produce lower moisture content and improved sensory characteristics and shelf life compared with conventional sun drying. In addition, research on dried-fish packaging indicates that controlling the storage environment can contribute to maintaining product quality. The present findings add a market-level perspective by showing that products available at Baruga Market differed descriptively in organoleptic characteristics and quantitatively in moisture and salt content. However, the study does not identify a single causal factor responsible for these differences because processing and storage conditions were not experimentally controlled. Therefore, improving the quality of dried salted anchovies at the market level may focus on controlling salting and drying processes, improving hygiene practices, using packaging that minimizes moisture reabsorption, and storing products in conditions protected from excessive heat and humidity. Further studies should involve a larger number of samples and include microbiological, physicochemical, packaging, and storage variables to determine more precisely the factors associated with quality variation in dried salted anchovies marketed in Kendari City.

CONCLUSION AND IMPLICATIONS

Based on the research findings, the quality of dried salted anchovies marketed at Baruga Market, Kendari City, showed variations in organoleptic characteristics among samples, particularly in texture,

color, aroma, and physical appearance. Sample III showed relatively favorable descriptive organoleptic characteristics, with a firm and dry texture, bright color, characteristic salted-fish aroma, and a clean, evenly dried appearance, whereas Sample VI showed softer texture and more pronounced moisture characteristics. These variations indicate that the physical quality of dried salted anchovies was not completely uniform among the samples examined.

Moisture and salt content also varied among the dried salted anchovy samples. The mean moisture content was 49.52%, with values ranging from 39.22% to 57.46%, while the mean salt content was 7.88%, with values ranging from 4.38% to 12.38%. Based on the quality reference values applied in this study, five of the six samples exceeded the 40% moisture reference value, while five samples had salt contents below the 10% reference value. These findings indicate that greater consistency in the salting and drying processes is needed to produce dried salted anchovies with more uniform quality characteristics.

The relationship between moisture and salt content showed a very weak and statistically nonsignificant correlation ($r = 0.130$; $p = 0.807$). Thus, higher salt content was not consistently accompanied by lower moisture content in the samples examined. The absence of a statistically significant relationship should be interpreted within the context of the six samples analyzed and should not be generalized to all dried salted anchovies marketed in Kendari City. Overall, the findings indicate the importance of controlling salting, drying, handling, and storage practices to improve product consistency. Further studies involving larger sample sizes and additional microbiological and physicochemical analyses are recommended to provide a more comprehensive assessment of product quality and food safety.

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