Chemical and Microbiology Analysis of Salted Anchovies 
(*Stolephorus sp.*) in East Denpasar Traditional Market

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Abstract

Jengki anchovies are one of the raw food ingredients that are preserved using salt. Salting is done to reduce the water content in the fish so that bacteria cannot live and develop. This study aims to determine the chemical and microbiological contamination of salted anchovies in East Denpasar Traditional Market. This research is a descriptive study using survey and experimental methods in the laboratory. Based on data from the Department of Industry and Trade in Denpasar, there are 7 traditional markets in East Denpasar. The number of samples studied was 43 samples from 75 existing populations. The parameters of this research were formaldehyde, moisture content, TPC, E. coli, and organoleptic. The results showed that none of the 43 samples contained formalin. The results of the water content test were obtained that all samples met the SNI 8273: 2016 requirements. From the results of the TPC test, 35 samples met the requirements and 8 samples exceeded the limits set by SNI 8273: 2016, namely the maximum limit of TPC contamination, namely $1.0 \times 10^5$ colonies/gram. The E. coli test results from 43 samples met the SNI 8273: 2016 requirements, namely the maximum limit of E. coli contamination $<3.6 \text{ APM} / \text{gram}$. From the results of the organoleptic test on appearance, smell, taste, texture, fungus, and overall acceptance, all assessments were significantly different, with the characteristics of a dull to clean bright appearance, specific to the type, specific odor but less strong, salty taste and a less specific type, dry solid texture too dense less dry.

Keywords: Jengki anchovies, Formalin, Total Plate Count, E.coli

1. Introduction

Food safety can be determined by the presence or absence of contamination from indigestible materials such as plastics, metals, or materials that can interfere with human digestion. Chemical contaminants come from hazardous chemical substances that cannot be used as food ingredients such as formaldehyde and pesticides as well as restricted food additives such as ascorbic acid, lactic, citrate, nitrate, and other food additives. Microbiological hazards come from the presence of pathogenic bacteria and toxins that are generated in foodstuffs. Healthy food is one of the factors that play a role in health, healthy food is needed by the human body. One of the ways to improve the quality of human resources is determined by the quality of food consumed.

Jengki anchovies are one of the foods that use a natural preservative in the form of salt. Salting the spoilage process can be inhibited so that the fish can be stored longer as well as its ability to inhibit bacterial growth and the activity of enzymes that cause putrefaction in the fish's body. Fish that have died decompose very quickly compared to beef, fruit, or vegetables [1].
2. Material and Methods

2.1 Place and time of research
The research was conducted at the Laboratory of the Faculty of Agriculture, Warmadewa University, and Denpasar Veterinary Center. This research was conducted from March 2020 to June 2020.

2.2 Research Material
2.2.1 Tool
Plastic bags for storing samples, Durham tubes, Petri dishes, desiccators, test tubes, 1 ml, 2 ml, 5 ml, 10 ml pipettes, media bottles, scissors, tweezers, inoculation needles, stomacher, bunsen burners, pH meter, analytical scale, drying oven, clamp pliers, magnetic stirrer, tube shaker (vortex), incubator, water bath, autoclave, sterile cabinet (clean bench), refrigerator, freezer, volumetric pipette, colony counter), and needle inoculation.

2.2.2 Ingredient
Jengki anchovies from 7 Traditional Markets, 0.5% phenylhydrazine solution, 5% sodium nitroprusside solution, 10% natrium hydroxide ocean, 37 Wt.% Purity formaldehyde standard (Cat PS-2031), distilled water, BPW (Buffered Pepton Water) 0.1%, BGLBB (Brilliant GreenLactose Bile Broth), LSTB (Lauryl Sulfate Tryptose Broth), ECB (Escherichia Coli Broth), L-EMBA (Levine Eosin Methylene Blue Agar) MR-VP (Methyl Red-Voges Proskauer ), PCA (Plate Count Agar) KCB (Koser Citrate Broth), SCA (Simmons Citrate Agar), Kovac Reagent, Voges-Proskauer Reagent (VP), BPW 0.1% (Buffered Pepton Water 0.1%) potassium chromate ( K₂CrO₄) 5%, and AgNO₃ 0.1 N, physiological salts of 0.85% NaCl.

2.3 Research Design
This type of research is descriptive research. The survey was conducted based on the existing population. The population is the whole unit of analysis that has general observable characteristics that will be the research target. This research uses survey and experimental methods in the laboratory.

The method used in sampling was the survey method with a simple random sampling technique, namely the technique of obtaining samples directly carried out in the sampling unit. The sampling technique was carried out once for each of the salted jengki fish traders randomly at 7 traditional markets in East Denpasar District at 14:00 WITA with samples of salted anchovy jengki. A sample of 1 ounce of traders will be taken then put into a plastic container and the analysis will be carried out on the same day as the sampling. This aims to avoid changes in terms of physical, chemical, and microbiological conditions.

Based on the Slovin Formula, which is the determination of the minimum number of samples to be studied with a set margin of error of 10% (90% confidence level), the calculations are as follows:

\[ n = \frac{N}{(1 + (N e^2))} \]

Where n is the sample, N is the population and “e” is the margin of error (10%). With the Slovin formula, the minimum number of samples to be studied is 43 samples from 75 existing populations.
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2.4 Research Implementation

The stages of this research consisted of surveys of anchovy salted fish traders to obtain research-related data, sampling randomly selected anchovy salted fish traders for sampling, analysis of samples in the laboratory which included: formalin analysis, moisture content, Escherichia coli bacteria, and Total Plate Count (TPC) as well as sensory.

2.5 Data Analysis

From the research data obtained, a descriptive analysis was carried out. The descriptive analysis carried out refers to SNI 8273-2016 concerning the quality and safety requirements of salted fish. From the results of this analysis, it is known that the safety level of the anchovies salted fish sold in East Denpasar Traditional Market in terms of chemical analysis and microbial contamination.

3. Results and Discussion

3.1 Formalin

The identification of formaldehyde was carried out qualitatively on samples of salted anchovies circulating in traditional markets in East Denpasar. The results showed that 43 samples of salted anchovies contain negative formalin.

According to [2], formalin is one of the prohibited additives for food. The use of formaldehyde in food is prohibited because it can have adverse effects on health. Previously researched the formaldehyde content of anchovies salted fish circulating in the Traditional Market of Denpasar City, the results showed that there were 7 samples or about 29.2% positive for formaldehyde out of 24 total samples of salted anchovies identified from the Traditional Market of Denpasar City. In the results of this study, no samples of salted anchovies contain formaldehyde, this shows that there is already an awareness of the anchovies salted fish processors not to use formaldehyde as a preservative in food. The results of the formalin test can be seen in Table 1.

Table 1

Results of Testing the Formalin Levels in Salted Anchovy Jengki Circulating in East Denpasar Traditional Markets

| No | Market Name                     | Sample Code | Test Result | Information |
|----|---------------------------------|-------------|-------------|-------------|
| 1  | Yadnya Market                   | PT1         | negative    | MS          |
| 2  | Yadnya Market                   | PT2         | negative    | MS          |
| 3  | Yadnya Market                   | PT3         | negative    | MS          |
| 4  | Yadnya Market                   | PT4         | negative    | MS          |
| 5  | Gunung Sari Market              | PT5         | negative    | MS          |
| 6  | Gunung Sari Market              | PT6         | negative    | MS          |
| 7  | Gunung Sari Market              | PT7         | negative    | MS          |
| 8  | Gunung Sari Market              | PT8         | negative    | MS          |
| 9  | Gunung Sari Market              | PT9         | negative    | MS          |
| 10 | Gunung Sari Market              | PT10        | negative    | MS          |
| 11 | Gunung Sari Market              | PT11        | negative    | MS          |
| 12 | Kertha Sari Village Market      | PT12        | negative    | MS          |
| 13 | Kertha Sari Village Market      | PT13        | negative    | MS          |
| 14 | Kertha Sari Village Market      | PT14        | negative    | MS          |
| 15 | Tamba Market                    | PT15        | negative    | MS          |
| 16 | Tamba Market                    | PT16        | negative    | MS          |
| 17 | Tamba Market                    | PT17        | negative    | MS          |
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18 Tamba Market  PT18  negative  MS
19 Tamba Market  PT19  negative  MS
20 Tamba Market  PT20  negative  MS
21 Tamba Market  PT21  negative  MS
22 Tamba Market  PT22  negative  MS
23 Tamba Market  PT23  negative  MS
24 Kerta Waringin Market  PT24  negative  MS
25 Kerta Waringin Market  PT25  negative  MS
26 Kerta Waringin Market  PT26  negative  MS
27 Kerta Waringin Market  PT27  negative  MS
28 Kerta Waringin Market  PT28  negative  MS
29 Kerta Waringin Market  PT29  negative  MS
30 Kerta Waringin Market  PT30  negative  MS
31 Kerta Waringin Market  PT31  negative  MS
32 Kerta Waringin Market  PT32  negative  MS
33 Kerta Waringin Market  PT33  negative  MS
34 Kerta Waringin Market  PT34  negative  MS
35 Kerta Waringin Market  PT35  negative  MS
36 Penatih Market  PT36  negative  MS
37 Penatih Market  PT37  negative  MS
38 Penatih Market  PT38  negative  MS
39 Penatih Market  PT39  negative  MS
40 Penatih Market  PT40  negative  MS
41 Tanjung Bungkak Market  PT41  negative  MS
42 Tanjung Bungkak Market  PT42  negative  MS
43 Tanjung Bungkak Market  PT43  negative  MS

Information: TMS (Not Eligible), MS (qualify)

### 3.2 Total Plate Count (TPC)

Based on the research results, the total microbes of salted anchovies were $7.0 \times 10^1$ to $1.3 \times 10^7$ colonies/g. Based on SNI 8273-2016, the maximum total microbial content is $1.0 \times 10^5$, this shows that there are samples of salted anchovies that do not meet the SNI can be seen in Table 2.

**Table 2**

| No | Market Name                  | Sample Code | Test Result | Information |
|----|------------------------------|-------------|-------------|-------------|
| 1  | Yadnya Market                | PT1         | $1.4 \times 10^4$ | MS          |
| 2  | Yadnya Market                | PT2         | $1.4 \times 10^3$ | MS          |
| 3  | Yadnya Market                | PT3         | $5.9 \times 10^3$ | MS          |
| 4  | Yadnya Market                | PT4         | $5.4 \times 10^3$ | MS          |
| 5  | Gunung Sari Market           | PT5         | $5.7 \times 10^2$ | MS          |
| 6  | Gunung Sari Market           | PT6         | $2.3 \times 10^3$ | MS          |
| 7  | Gunung Sari Market           | PT7         | $1.2 \times 10^2$ | MS          |
| 8  | Gunung Sari Market           | PT8         | $1.6 \times 10^3$ | MS          |
| 9  | Gunung Sari Market           | PT9         | $8.7 \times 10^2$ | MS          |
| 10 | Gunung Sari Market           | PT10        | $2.9 \times 10^3$ | MS          |
| 11 | Gunung Sari Market           | PT11        | $4.4 \times 10^3$ | MS          |
| 12 | Kertha Sari Village Market   | PT12        | $6.6 \times 10^3$ | MS          |
| 13 | Kertha Sari Village Market   | PT13        | $3.4 \times 10^2$ | MS          |
| 14 | Kertha Sari Village Market   | PT14        | $2.4 \times 10^5$ | TMS        |
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|   | Location                | Sample Code | Total Bacteria Count | Result |
|---|-------------------------|-------------|----------------------|--------|
| 15| Tamba Market PT15       | 1.8×10²     | MS                   |
| 16| Tamba Market PT16       | 7.0×10¹     | MS                   |
| 17| Tamba Market PT17       | 9.0×10²     | MS                   |
| 18| Tamba Market PT18       | 1.8×10⁴     | MS                   |
| 19| Tamba Market PT19       | 9.7×10²     | MS                   |
| 20| Tamba Market PT20       | 1.5×10⁴     | MS                   |
| 21| Tamba Market PT21       | 2.7×10⁴     | MS                   |
| 22| Tamba Market PT22       | 6.0×10²     | MS                   |
| 23| Tamba Market PT23       | 9.6×10⁴     | MS                   |
| 24| Kerta Waringin Market PT24 | 1.9×10³ | MS                   |
| 25| Kerta Waringin Market PT25 | 9.6×10³ | MS                   |
| 26| Kerta Waringin Market PT26 | 7.8×10² | MS                   |
| 27| Kerta Waringin Market PT27 | 1.3×10³ | MS                   |
| 28| Kerta Waringin Market PT28 | 5.6×10⁵ | TMS                  |
| 29| Kerta Waringin Market PT29 | 5.6×10³ | MS                   |
| 30| Kerta Waringin Market PT30 | 3.6×10³ | MS                   |
| 31| Kerta Waringin Market PT31 | 2.6×10⁶ | TMS                  |
| 32| Kerta Waringin Market PT32 | 8.5×10³ | MS                   |
| 33| Kerta Waringin Market PT33 | 8.4×10² | MS                   |
| 34| Kerta Waringin Market PT34 | 8.8×10² | MS                   |
| 35| Kerta Waringin Market PT35 | 2.0×10⁵ | TMS                  |
| 36| Penatih Market PT36     | 2.2×10⁵     | TMS                  |
| 37| Penatih Market PT37     | 2.4×10⁴     | MS                   |
| 38| Penatih Market PT38     | 1.5×10⁵     | TMS                  |
| 39| Penatih Market PT39     | 3.4×10⁵     | TMS                  |
| 40| Penatih Market PT40     | 2.6×10²     | MS                   |
| 41| Tanjung Bungkak Market PT41 | 3.7×10⁶ | MS                   |
| 42| Tanjung Bungkak Market PT42 | 4.1×10⁴ | MS                   |
| 43| Tanjung Bungkak Market PT43 | 1.3×10⁷ | TMS                  |

Information: TMS (Not Eligible), MS (qualify)

Based on Table 2, the results of the Total Plate Count (TPC) test on 43 samples of salted fish, there are as many as 8 samples of salted anchovies that do not meet the Indonesian National Standard. According to [3], the water content in food ingredients affects the resistance of foodstuffs to microbial attack which is expressed as aw, namely the amount of free water that can be used by microorganisms for their growth. High water content is thought to result in high total bacteria in these foodstuffs. The microorganisms that are thought to be able to grow on anchovies are halophilic bacteria because mold, yeast, and bacteria require high aw values for their growth.

### 3.3 *Escherichia coli*

The presence of *E. coli* bacteria is an indicator of food safety. *E. coli* bacteria are a group of bacteria in the form of rods, gram-negative. These bacteria are used as an indicator of the presence of pollution from animal and human waste and indicate poor sanitation of water and food or processed products. Based on Table 3 the results of testing for *E. coli* bacteria in salted anchovies, all samples do not contain *E. coli*. This is by SNI 8273-2016 *E. coli* contamination, namely <3.6 APM / g. The absence of *E. Coli* in the anchovies salted fish samples sold by traders in traditional markets is thought to be due to the processing of salted anchovy fish and hygienic places of sale, and the equipment used is free from bacteria so that bacterial growth can be prevented. The presence or absence of Escherichia coli bacteria in anchovies can be caused by several factors, including conditions that do not support the growth of Escherichia coli bacteria [4].
### Table 3

Testing results of e. Coli on salted anchovy jengki circulating in East Denpasar traditional market

| No | Market Name            | Sample Code | Test Result | Information |
|----|------------------------|-------------|-------------|-------------|
| 1  | Yadnya Market          | PT1         | <3.6        | MS          |
| 2  | Yadnya Market          | PT2         | <3.6        | MS          |
| 3  | Yadnya Market          | PT3         | <3.6        | MS          |
| 4  | Yadnya Market          | PT4         | <3.6        | MS          |
| 5  | Gunung Sari Market     | PT5         | <3.6        | MS          |
| 6  | Gunung Sari Market     | PT6         | <3.6        | MS          |
| 7  | Gunung Sari Market     | PT7         | <3.6        | MS          |
| 8  | Gunung Sari Market     | PT8         | <3.6        | MS          |
| 9  | Gunung Sari Market     | PT9         | <3.6        | MS          |
| 10 | Gunung Sari Market     | PT10        | <3.6        | MS          |
| 11 | Gunung Sari Market     | PT11        | <3.6        | MS          |
| 12 | Gunung Sari Market     | PT12        | <3.6        | MS          |
| 13 | Gunung Sari Market     | PT13        | <3.6        | MS          |
| 14 | Gunung Sari Market     | PT14        | <3.6        | MS          |
| 15 | Tamba Market           | PT15        | <3.6        | MS          |
| 16 | Tamba Market           | PT16        | <3.6        | MS          |
| 17 | Tamba Market           | PT17        | <3.6        | MS          |
| 18 | Tamba Market           | PT18        | <3.6        | MS          |
| 19 | Tamba Market           | PT19        | <3.6        | MS          |
| 20 | Tamba Market           | PT20        | <3.6        | MS          |
| 21 | Tamba Market           | PT21        | <3.6        | MS          |
| 22 | Tamba Market           | PT22        | <3.6        | MS          |
| 23 | Tamba Market           | PT23        | <3.6        | MS          |
| 24 | Waringin Market        | PT24        | <3.6        | MS          |
| 25 | Waringin Market        | PT25        | <3.6        | MS          |
| 26 | Waringin Market        | PT26        | <3.6        | MS          |
| 27 | Waringin Market        | PT27        | <3.6        | MS          |
| 28 | Waringin Market        | PT28        | <3.6        | MS          |
| 29 | Waringin Market        | PT29        | <3.6        | MS          |
| 30 | Waringin Market        | PT30        | <3.6        | MS          |
| 31 | Waringin Market        | PT31        | <3.6        | MS          |
| 32 | Waringin Market        | PT32        | <3.6        | MS          |
| 33 | Waringin Market        | PT33        | <3.6        | MS          |
| 34 | Waringin Market        | PT34        | <3.6        | MS          |
| 35 | Waringin Market        | PT35        | <3.6        | MS          |
| 36 | Penatih Market         | PT36        | <3.6        | MS          |
| 37 | Penatih Market         | PT37        | <3.6        | MS          |
| 38 | Penatih Market         | PT38        | <3.6        | MS          |
| 39 | Penatih Market         | PT39        | <3.6        | MS          |
| 40 | Penatih Market         | PT40        | <3.6        | MS          |
| 41 | Tanjung Bungkak Market | PT41        | <3.6        | MS          |
| 42 | Tanjung Bungkak Market | PT42        | <3.6        | MS          |
| 43 | Tanjung Bungkak Market | PT43        | <3.6        | MS          |

### 3.4 Water Content

Based on the results of the research, the water content of the salted jengki fish samples circulating in traditional markets in East Denpasar meets SNI 8273-2016, namely a maximum of 40%. From the test results, it was found that the sample moisture content was in the range 15.346% - 23.044% in Table 4 and Figure 1.
Table 4
Results of Testing the Water Content in Salted Anchovies Jengki Circulating in East Denpasar Traditional Market

| No | Market Name                  | Sample Code | Test result | Information |
|----|------------------------------|-------------|-------------|-------------|
| 1  | Yadnya Market                | PT1         | 17.23       | MS          |
| 2  | Yadnya Market                | PT2         | 17.30       | MS          |
| 3  | Yadnya Market                | PT3         | 15.34       | MS          |
| 4  | Yadnya Market                | PT4         | 15.82       | MS          |
|    | Gunung Sari Market           | PT5         | 15.77       | MS          |
| 5  | Gunung Sari Market           | PT6         | 16.90       | MS          |
| 6  | Gunung Sari Market           | PT7         | 18.38       | MS          |
| 7  | Gunung Sari Market           | PT8         | 16.24       | MS          |
| 8  | Gunung Sari Market           | PT9         | 16.34       | MS          |
| 9  | Gunung Sari Market           | PT10        | 16.72       | MS          |
| 10 | Gunung Sari Market           | PT11        | 23.04       | MS          |
| 11 | Kertha Sari Village Market   | PT12        | 17.24       | MS          |
| 12 | Kertha Sari Village Market   | PT13        | 15.83       | MS          |
| 13 | Kertha Sari Village Market   | PT14        | 16.47       | MS          |
| 14 | Tamba Market                 | PT15        | 17.52       | MS          |
| 15 | Tamba Market                 | PT16        | 15.53       | MS          |
| 16 | Tamba Market                 | PT17        | 18.00       | MS          |
| 17 | Tamba Market                 | PT18        | 17.59       | MS          |
| 18 | Tamba Market                 | PT19        | 19.92       | MS          |
| 19 | Tamba Market                 | PT20        | 18.01       | MS          |
| 20 | Tamba Market                 | PT21        | 17.29       | MS          |
| 21 | Tamba Market                 | PT22        | 16.17       | MS          |
| 22 | Tamba Market                 | PT23        | 16.60       | MS          |
| 23 | Tamba Market                 | PT24        | 17.24       | MS          |
| 24 | Kerta Waringin Market        | PT25        | 16.85       | MS          |
| 25 | Kerta Waringin Market        | PT26        | 18.98       | MS          |
| 26 | Kerta Waringin Market        | PT27        | 17.03       | MS          |
| 27 | Kerta Waringin Market        | PT28        | 17.11       | MS          |
| 28 | Kerta Waringin Market        | PT29        | 17.63       | MS          |
| 29 | Kerta Waringin Market        | PT30        | 15.83       | MS          |
| 30 | Kerta Waringin Market        | PT31        | 16.33       | MS          |
| 31 | Kerta Waringin Market        | PT32        | 15.43       | MS          |
| 32 | Kerta Waringin Market        | PT33        | 17.12       | MS          |
| 33 | Kerta Waringin Market        | PT34        | 17.14       | MS          |
| 34 | Kerta Waringin Market        | PT35        | 17.71       | MS          |
| 35 | Kerta Waringin Market        | PT36        | 17.46       | MS          |
| 36 | Penath Market                | PT37        | 16.93       | MS          |
| 37 | Penath Market                | PT38        | 15.99       | MS          |
| 38 | Penath Market                | PT39        | 16.30       | MS          |
| 39 | Penath Market                | PT40        | 19.25       | MS          |
| 40 | Penath Market                | PT41        | 15.84       | MS          |
| 41 | Tanjung Bungkak Market       | PT42        | 15.87       | MS          |
| 42 | Tanjung Bungkak Market       | PT43        | 18.09       | MS          |

Information: TMS (Not Eligible), MS (qualify)
The water content of samples in salted anchovy jengki circulating in East Denpasar Traditional Market

The water content is influenced by the salt content during the processing of salted fish. The higher the salt content, the lower the water content in the material, this is because salt has hygroscopic properties so that it can absorb water contained in fish [5]. From the research results, the sample of salted anchovies has a water content that meets the predetermined standards. This shows that post-processing such as marketing and storage is appropriate. During storage, the anchovies are not placed in open conditions because the salt contained in the anchovies can absorb air vapor in the surrounding environment and cause high water content in the product. High water content can affect the number of microorganisms in salted fish.

3.5 Sensory Assessment

The samples of salted anchovy anchovies circulating in traditional markets in East Denpasar were also subjected to organoleptic testing with variables of appearance, smell, taste, texture, and mushroom test results can be seen in Table 5.

The organoleptic assessment aims to determine the panelist's assessment of the anchovies salted fish sample subjectively. Based on the assessment of appearance, the samples of salted anchovies received an assessment of their appearance from being dull to clean, bright, specific to species. The highest value with the sample code PT13 with a value of 8.33 is in the range 7-9. With clean specification criteria, bright to very bright, specific to type. The assessment of the dull anchovy salted fish was about 41.86% of the total sample. Anchovies salted fish that look dull is thought to be due to the unclean processing process and the presence of fungi that cause the fish to look unclean.

Based on the assessment of the smell of salted anchovies, it can be seen that the average results show a specific odor but less strong, the highest value is the sample code PT16 with a value of 8.60, which is in the range 7-9 With the criteria for the type specification is less strong to the specific type is strong. According to [6], the aroma of anchovies is the result of the activity of breaking down macromolecular compounds (proteins and fats) in fish into volatile compounds [7].
### Table 5

Organoleptic Test Results (Appearance, Smell, Taste, Texture and Mushroom Presence) on Salted Jengki Anchovies Circulating in East Denpasar Traditional Market

| Sample Code | Appearance | Smell | Taste | Texture | Mushrooms |
|-------------|------------|-------|-------|---------|-----------|
| PT1         | 5.67 ijk  | 8.20 a | 8.33 ab | 8.60 a | 9.00 a |
| PT2         | 7.00 bcdef | 7.27 cde | 7.27 defg | 7.67 bcd | 9.00 a |
| PT3         | 6.87 cdefg | 7.27 cde | 7.00 fg | 7.13 bcdef | 5.80 bc |
| PT4         | 7.80 Ab    | 7.00 e | 7.53 cdefg | 6.87 def | 7.93 ab |
| PT5         | 7.67 abc   | 7.00 e | 7.13 efg | 7.13 bcdef | 5.80 bc |
| PT6         | 5.67 ijk  | 7.80 bede | 7.13 efg | 7.40 bcd | 6.87 abc |
| PT7         | 7.80 ab    | 7.40 cde | 7.40 cdefg | 7.53 bcd | 9.00 a |
| PT8         | 5.67 ijk  | 7.13 de | 7.27 defg | 7.80 bc | 6.87 abc |
| PT9         | 5.80 hijkl | 7.40 cde | 7.27 defg | 7.00 cdef | 9.00 a |
| PT10        | 6.47 efgi  | 8.20 ab | 7.53 cdefg | 7.00 cdef | 8.47 a |
| PT11        | 7.00 bcdef | 7.27 cde | 7.13 efg | 7.80 bc | 6.87 abc |
| PT12        | 5.13 l    | 8.33 ab | 7.13 efg | 7.13 bcdef | 9.00 a |
| PT13        | 8.33 a    | 7.27 cde | 7.27 defg | 7.40 bcd | 9.00 a |
| PT14        | 7.53 bcd  | 7.27 cde | 7.67 bcd | 7.67 bcd | 9.00 a |
| PT15        | 6.87 cdefg | 7.13 de | 7.53 cdefg | 7.53 bcd | 9.00 a |
| PT16        | 5.53 jkl  | 8.60 a | 7.80 abcede | 7.00 cdef | 9.00 a |
| PT17        | 5.67 ijk  | 7.93 abed | 7.93 abed | 7.00 cdef | 9.00 a |
| PT18        | 6.60 efgi  | 7.67 bede | 7.00 fg | 7.27 bcdef | 9.00 a |
| PT19        | 5.27 kl   | 7.67 bede | 7.80 abcede | 7.80 bc | 9.00 a |
| PT20        | 5.27 kl   | 7.67 bede | 8.07 abc | 7.00 cdef | 7.40 ab |
| PT21        | 5.27 kl   | 7.93 abed | 7.80 abcede | 7.00 cdef | 9.00 a |
| PT22        | 6.87 cdefg | 7.93 abed | 7.53 cdefg | 7.00 cdef | 9.00 a |
| PT23        | 6.07 ghijk | 8.07 abc | 7.53 cdefg | 7.53 bcd | 9.00 a |
| PT24        | 5.40 jkl  | 7.40 cde | 8.33 ab | 6.60 ef | 6.87 abc |
| PT25        | 5.13 l    | 7.80 abcede | 7.00 fg | 6.47 f | 6.87 abc |
| PT26        | 6.87 cdefg | 7.27 cde | 7.40 cdefg | 7.67 bcd | 9.00 a |
| PT27        | 7.27 bcd  | 7.80 abcede | 7.13 bcdef | 9.00 a |
| PT28        | 5.67 ijk  | 8.20 ab | 7.80 abcede | 7.00 cdef | 6.87 abc |
| PT29        | 7.00 bcdef | 7.00 e | 7.40 cdefg | 7.93 ab | 9.00 a |
| PT30        | 7.53 bcd  | 7.67 bede | 7.27 defg | 7.27 bcdef | 6.87 abc |
| PT31        | 6.60 efgi  | 7.27 cde | 7.53 cdefg | 7.13 bcdef | 4.73 c |
| PT32        | 6.87 cdefg | 7.80 bede | 7.40 cdefg | 7.53 bcd | 5.80 bc |
| PT33        | 6.60 efgi  | 7.27 cde | 7.40 cdefg | 6.87 def | 9.00 a |
| PT34        | 5.67 ijk  | 7.93 abed | 7.40 cdefg | 6.87 def | 9.00 a |
| PT35        | 5.40 jkl  | 8.47 ab | 7.93 abed | 7.80 bc | 6.87 abc |
| PT36        | 5.27 kl   | 7.80 abcede | 8.47 a | 7.40 bcde | 6.87 abc |
| PT37        | 5.67 ijk  | 8.20 ab | 7.93 abed | 7.27 bcdef | 9.00 a |
| PT38        | 6.73 defg  | 7.67 bede | 8.07 abc | 7.13 bcdef | 6.87 abc |
| PT39        | 6.20 fghij | 7.67 bede | 7.40 cdefg | 7.00 cdef | 9.00 a |
| PT40        | 5.80 hijkl | 8.33 ab | 6.87 g | 7.53 bcd | 9.00 a |
| PT41        | 6.73 defg  | 8.33 ab | 7.40 cdefg | 7.93 ab | 9.00 a |
| PT42        | 6.87 cdefg | 8.07 abc | 8.07 abc | 7.53 bcd | 5.80 bc |
| PT43        | 6.20 fghij | 8.20 ab | 7.27 defg | 7.13 bcdef | 5.8 bc |

Note: The average value followed by the same letter in the same column is not significantly different at the Duncan test level of 5%
The assessment of the texture of the anchovies was obtained from dry to less dry solids. The highest value with the sample code PT1 with a value of 8.60, which is in the range 7-9. With the criteria of being solid, less dry to dry. The texture of the anchovies is influenced by the water content in the fish. This is by the opinion of [5] which states that fish muscles and cells will be bound due to the release of water content in the fish body after drying and osmosis dehydration processes.

Based on the assessment by the panelists, from 43 samples of salted anchovies circulating in the East Denpasar Traditional Market, there are 55.81% of the samples that do not appear to be contaminated with mushrooms. For the assessment of mushrooms, namely values 1 and 9 with the criteria for number 1 there is no fungus and number 9 there is no fungus. According to [8], the greatest damage to salted anchovies is caused by insects, amounting to 66.67%, while those caused by fungi are 26.98%. The ease with which the salted anchovy fish is damaged by the fungus makes this product vulnerable to health hazards. If during storage it allows for mold growth, it will be damaged by these molds and will continue to increase with increasing storage time.

4. Conclusion

Research shows that 43 samples do not contain formalin. water content obtained by all samples met the requirements of SNI 8273: 2016. The results of the TPC test showed that 35 samples met the requirements and 8 samples exceeded the limits set by SNI 8273: 2016, namely the maximum limit of TPC contamination, namely $1.0 \times 105$ colonies/gram. E. coli testing from 43 samples fulfilled the SNI 8273: 2016 requirements, namely the maximum limit of E. coli contamination $<3.6$ APM/gram. From the results of the organoleptic test on appearance, smell, taste, texture, fungus, and overall acceptance, all assessments were significantly different, with the characteristics of a dull to bright clean appearance, specific to the type, specific odor but less strong, salty taste and a less specific type, dry solid texture too dense less dry.

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