Jurnal Pertanian Terapan of JURNAL ROCE (AGROSCIENCE)
https://jurnal.rocewisdomaceh.com/index.php/roce e-ISSN : 3032-4505
Vol.1 No.2 Thn 2024

EFFECTIVENESS OF PANDAN WANGI (*PANDANUS AMARYLLIFOLIUS*) LEAF EXTRACT ON THE QUALITY OF PRESERVING SALTED DUCK EGGS

EFEKTIVITAS SARI DAUN PANDAN WANGI (*PANDANUS AMARYLLIFOLIUS*) TERHADAP KUALITAS PENGAWETAN TELUR ITIK ASIN

Ika Rezvani Aprita[1], Zulvia Maika Letis[2*], Mulla Kemalawaty[2], Chairil Anwar[1], Sukinem[2], Irmayanti[3]

[1]Agroindustri, Politeknik Indonesia Venezuela
[2]Teknologi Pengolahan Hasil Ternak, Politeknik Indonesia Venezuela,
[3]Teknologi Industri Pertanian, Fakultas Teknologi Pertaniani,Universitas Serambi mekkah
*email Koresponden: Zulviamaikaletis@gmail.com

Article Info

Article history :
Received
23 – 08 – 2024
Received in revised
23 – 08 – 2024
Accepted
26 – 08 – 2024
Availeble online
26 – 08 – 2024

Abstract

Duck eggs are a source of animal protein which generally have lower foam properties and stability compared to purebred chicken eggs, so that the use of duck eggs is still very less compared to purebred chicken eggs in various processed food products. One form of processed food product from duck eggs is salted duck eggs which are obtained by preserving them using salt (salting). In the preservation process, duck eggs are very susceptible to contamination, so alternatives are needed that can inhibit bacterial growth. Fragrant pandan leaves (*Pandanus Ammaryllifolius*) are believed to be able to suppress the growth of *Escherichia Coli* and *Staphylococcus aureus* bacteria, which are 2 types of bacteria that are an indication of food safety. The aim of this research is to determine the effectiveness of adding fragrant pandan leaf extract (*Pandanus Amoryllifolius*) on the quality of salted duck eggs produced. The method used in this research was a Completely Randomized Design (CRD) model analysis with the concentration factor of adding fragrant pandan leaf extract (*Pandanus amaryllifolius)*. The method used in this research was a Completely Randomized Design (CRD) model analysis with the concentration factor of adding fragrant pandan leaf extract (*Pandanus Amaryllifolius*) consisting of 5 treatments, namely A = 0%, B = 3% C = 6%, D = 9 %, E = 12%. Each treatment was carried out 4 times to obtain 20 experimental units. Each treatment was carried out 4 times to obtain 20 experimental units. The results of the research showed that the addition of fragrant pandan leaf juice (*Pandanus Amoryllifolius*) had a significant effect on the organoleptic test of salted eggs, marked by a decrease in weight loss, ranging from 0,14-13,26 with an average value of 3.09. The total microbacterial test ranged between 0.63x10-7 CFU/mL-16.16 x 10-7 CFU/mL with an average value of 6.15 x 10-7 CFU/mL, and organoleptic test that the panelists still like.

Keywords: *Pandan leaves, Duck, Quality.Eggs, Preservation*

Abstrak

Telur itik merupakan salah satu sumber protein hewani yang umumnya memiliki sifat daya dan kestabilan buih yang lebih rendah dibandingkan telur ayam ras, sehingga pemanfaatan telur itik masih sangat kurang dibandingkan dengan telur ayam ras dalam berbagai produk olahan pangan. Salah satu bentuk produk olahan pangan dari telur itik adalah telur itik asin yang diperoleh dengan cara pengawetan menggunakan garam (penggaraman). Dalam proses pengawetan, telur itik sangat rentan terjadinya kontaminasi,sehingga diperlukan alternative yang dapat menghambat pertumbuhan bakteri. Daun pandan wangi (*Pandanus Ammaryllifolius*) diyakini mampu menekan pertumbuhan bakteri *Escherichia Coli* dan *Staphylococcus aureus*, yang merupakan 2 jenis bakteri sebagai indikasi keamanan pangan. Tujuan dari penelitian ini adalah untuk mengetahui efektivitas penambahan ekstrak daun pandan wangi (*Pandanus Amoryllifolius*) terhadap mutu telur itik asin yang dihasilkan. Metode yang digunakan dalam penelitian ini adalah model analisis Rancangan Acak Lengkap (RAL) dengan faktor konsentrasi penambahan ekstrak daun pandan wangi *(Pandanus amaryllifolius)* yang terdiri dari 5 perlakuan yaitu AU = 0%, BU = 3% CU = 6%, DU = 9%, EU = 12%. Setiap perlakuan dilakukan 4 kali ulangan sehingga diperoleh 20 satuan percobaan. Hasil penelitian menunjukkan bahwa penambahan sari daun pandan wangi (*Pandanus amorylifolius*) berpengaruh sangat nyata terhadap uji organoleptik telur asin, ditandai dengan berkurangnya susut bobot berkisar antara 0,14 – 13,26 dengan nilai rata-rata 3,09. Uji total mikroba berkisar antara 0,63 x 10^{-7} cfu/ml – 16,16 x 10^{-7} CFU/mL dengan nilai rata-rata 6,15 x $^{10-7}$CFU/mL. dan organoleptik yang masih disukai panelis.

Kata Kunci : Daun pandan wangi, Itik, Kualitas, Telur, Pengawetan

INTRODUCTION

The livestock sector has an important role in realizing the nation's prosperity, especially in the fields of economy and food security. A country will be independent if it is able to manage its own agricultural production, especially Indonesia which has abundant local livestock biodiversity such as cows, buffalo, goats, sheep. Chickens. Ducks and so on. Usman (2016), started that demand for food from livestock in Indonesia continues to increase but fulfillment of this need is low so that livestock products are a basic need that cannot be fulfilled independently. Susila A>A (2020), also said that one solution in creating independence is ti raise poultry such as chikens, ducks, quail, which have great potential and have very good market prospects because they are supported by the caracteristics of poultry products that are acceptable to the Indonesian people. Like meat and eggs. With easy access and relatively cheap prices, this commodity has become the largest contributor to the national meat supply and the main driver of the national animal protein supply.

Eggs are a source of animal protein with a delicious taste, easy digestion, and high nutritional value. Additionally, eggs are easily available and relatively inexpensive (Ramli, I & Wahab, 2020). The advantages of eggs as a food source include their rich nutrient profile; they are not only high in vitamins, minerals, fatty acids, and protein but also are perishable products (Pires *et al.*, 2019), susceptible to natural, chemical, or microbial damage through the egg's pores. Therefore, preservation efforts are crucial to maintaining the quality of eggs. Poultry products

that are commonly preserved often come from duck eggs. Duck eggs are a good source of nutrition, with a protein content of 13.1%, and higher calories and fat compared to chicken eggs (Kaewmanee *et al.*, 2011). The nutritional content of duck eggs is greatly influenced by the feed consumed by the ducks (Harmayanda *et al.*, 2016). Duck eggs have a strong fishy odor, so their use in various foods is not as prevalent as chicken eggs. One way to reduce this fishy odor is by processing duck eggs into salted eggs, due to the larger pores of duck eggs (Yulia *et al.*, 2024). These pores can be advantageous when absorbed into the egg (Ardiansyah, 2019). Processing duck eggs into salted eggs can extend their shelf life, enhance flavor, and reduce the fishy odor of duck eggs (Yulia *et al.*, 2024).

Preservation is a method commonly used to extend the shelf life of food products. One type of preservation is salting (salting process), such as in the preservation of eggs. The nutritional composition of salted eggs changes during processing and preparation. Some nutrients in salted eggs increase, while others diminish during production and storage (Ganesan *et al.*, 2014). Salted eggs can also be enriched with natural preservatives, such as plant-based additives (Cahyono *et al.*, 2022). Herbal plants are widely used in the preservation and processing of poultry eggs (Rokana, 2018). Fragrant pandan leaves (*Pandanus amaryllifolius*) are one such natural preservative with potential use in salted eggs (Cahyono *et al.*, 2022), which can help enhance the quality of duck eggs and maintain them during the preservation process.

Fragrant pandan leaves (*Pandanus amaryllifolius*) are commonly used as a coloring and flavoring agent in food, and it is highly appropriate to explore their development as a food preservative. In addition to providing color and aroma, this plant also has antimicrobial activity due to the presence of tannins, alkaloids, flavonoids, and polyphenols, making it a potential natural preservative (Silalahi, 2018). The active compounds in fragrant pandan leaves have the potential to serve as a natural preservative and enhance the quality of salted duck eggs. Previous research has demonstrated that a 15% concentration of pandan leaf extract can reduce fungal contamination in traditional foods (Mardiyansyah & Aini, 2014). Similarly, Ahmad & Kadir (2020) reported that the addition of pandan leaf extract increased phosphorus levels in salted eggs. Therefore, this study aims to evaluate the effectiveness of fragrant pandan leaf extract (*Pandanus amaryllifolius*) at different concentrations on the quality of salted duck eggs, specifically focusing on weight loss, total microbial count, and organoleptic properties.

RESEARCH METHODOLOGY

Research Location

This study was conducted at the Integrated Laboratory, Animal Product Technology Program, Politeknik Indonesia Venezuela, Aceh Besar. The total microbial analysis was performed at the Pest and Plant Disease Laboratory, Syiah Kuala University, while the weight loss and organoleptic tests were carried out at the Integrated Laboratory, Politeknik Indonesia Venezuela.

Research Design

The study employed a Completely Randomized Design (CRD) with the factor being the concentration of fragrant pandan leaf extract (*Pandanus amaryllifolius*). There were 5 treatment levels: A (control = 0%), B (3%), C (6%), D (9%), and E (12%), with each treatment having 4 replications, resulting in a total of 20 observation units, each consisting of 5 eggs. The research was conducted by applying fragrant pandan leaf extract to the salting process of eggs with the following treatment levels:

1. AU = Eggs without pandan leaf extract,
2. BU = 3% pandan leaf extract,
3. CU = 6% pandan leaf extract,
4. DU = 9% pandan leaf extract,
5. EU = 12% pandan leaf extract.

Research Implementation

Preparation of Duck Eggs

Duck eggs intended for making salted eggs are first cleaned of dirt using clean water and then dried.

Preparation of Solution

The preparation of the salted egg mixture involves creating a salt solution with a 1:4 ratio of table salt to clean water. After preparing the salt solution, an extract solution of fragrant pandan leaves is made at concentrations of 0%, 3%, 6%, 9%, and 12%. The salt solution is then mixed with the pandan leaf extract solution until the mixture is homogeneous.

Salting Process

The salted eggs are incubated for 14 days in a closed container. After 14 days of storage, the salted eggs are tested for total microbial count and weight loss. The organoleptic test is performed on the salted eggs after they have been boiled.

Research Parameters

1. Total Microbial Count

Petri dishes with colony counts between 25 and 250 are selected and counted. The number of microorganisms is determined by counting all colonies that grow on each petri dish.

2. Weight Loss Analysis

Weight loss is calculated as the difference between the initial weight of the eggs before treatment (day 0) and the final weight after treatment (14 days), expressed as a percentage.

3. Organoleptic Testing

Organoleptic assessment evaluates the quality of food based on sensory attributes. It requires a panel, either individual or group, to judge the quality and characteristics of the food based on subjective impressions. Various types of panels include individual tasters, limited tasters, trained panels, untrained panels, semi-trained panels, and consumer panels.

For this study, a semi-trained panel of 25 people was used. The hedonic test assessed color, flavor, aroma, and texture on a 5-point scale:

1. Strongly Dislike : 0.00 – 1.49
2. Dislike : 1.50 – 2.49
3. Somewhat Like : 2.50 – 3.49
4. Like : 3.50 – 4.49
5. Strongly Like : 4.50 – 5.59

RESULT AND DISCUSSION

Weight Loss Test

Based on the research conducted, the average weight loss values of salted duck eggs treated with fragrant pandan leaf extract (*Pandanus amaryllifolius*) at different concentrations can be observed in Figure 1. The analysis of variance for the treatments with different concentrations of pandan leaf extract (AU (0%), BU (3%), CU (6%), DU (9%), and EU (12%)) showed a significant effect ($P < 0.01$) on the weight loss of salted duck eggs. The results of the weight loss test indicate that the values ranged from 0.14% to 13.26%, with an average value of 3.09%.

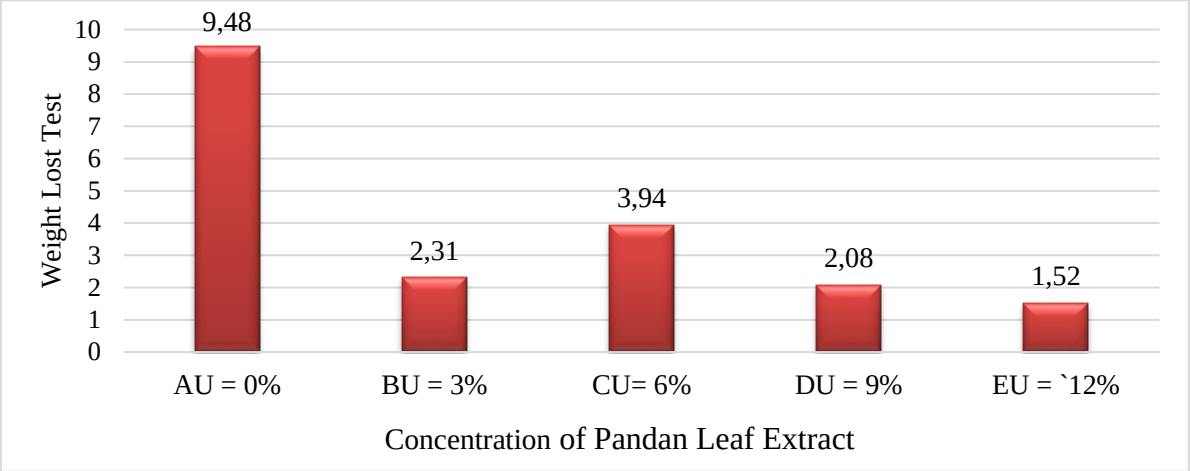

Figure 1. The Addition of Fragrant Pandan Leaf Extract at Different Concentrations Significantly Affects The Weight Loss of Salted Duck Eggs.

Figure 1 shows that the highest weight loss of salted duck eggs was observed in the AU (0%) treatment, at 9.48%. This was significantly higher compared to the BU (3%) treatment at 2.31%, the CU (6%) treatment at 3.94%, the DU (9%) treatment at 2.08%, and the EU (12%) treatment at 1.52%. The lowest weight loss was found in the EU (12%) treatment at 1.52%, which was not significantly different from the BU (3%) treatment at 2.31%, the CU (6%) treatment at 3.94%, and the DU (9%) treatment at 2.08%, but was significantly different from the AU (0%) treatment at 9.48%.

As the concentration of fragrant pandan leaf extract increased, the weight loss of eggs in the BU, DU, and EU treatments decreased compared to those without pandan leaf extract, though there was an increase in egg weight in the CU treatment. This increase in weight in the CU

treatment is attributed to the absorption of water into the eggs through the shell pores. On the other hand, the reduced weight loss in the treatments with pandan leaf extract can be explained by the fact that the extract, mixed with the salt solution, helps to decrease the egg's weight during storage. This observation aligns with Yosie's (2016) explanation that during storage, evaporation of water and gases (CO_2) through the shell pores leads to weight loss, while during salting, the salt solution (NaCl) and pandan leaf extract enter the egg through the shell pores, reaching the egg white and yolk. Over time, this process leads to the enlargement of the air sac in the egg, which results in reduced weight loss.

Total Microbial Count Test

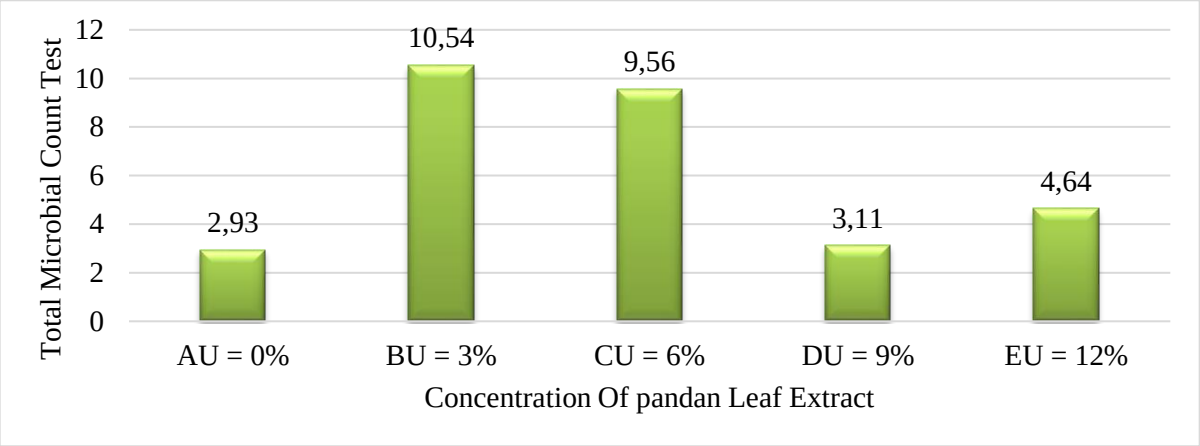

Figure 2. The Addition of Fragrant Pandan Leaf Extract at Different Concentrations Significantly Affects The Total Microbial Count Test of Salted Duck Eggs.

Based on the research conducted, the average total microbial count values of salted duck eggs treated with fragrant pandan leaf extract (*Pandanus amaryllifolius*) at different concentrations are shown in Figure 2. The analysis of variance for the treatments with different concentrations of pandan leaf extract (AU (0%), BU (3%), CU (6%), DU (9%), and EU (12%)) indicated a significant effect ($P < 0.05$) on the total microbial count of salted duck eggs. The results of the total microbial count test show that values ranged from 0.63×10^{-7} CFU/mL to 16.16×10^{-7} CFU/mL, with an average value of 6.15×10^{-7} CFU/mL. This indicates that the concentration of pandan leaf extract significantly influences the microbial load in salted duck eggs, potentially affecting their safety and quality.

Figure 2 shows that the highest total microbial count in salted duck eggs was observed in the BU (3%) treatment, with 10.54×10^{-7} CFU/mL. This was not significantly different from the CU (6%) treatment, which had 9.56×10^{-7} CFU/mL, but was significantly higher compared to the AU (0%) treatment at 2.93×10^{-7} CFU/mL, the DU (9%) treatment at 3.11×10^{-7} CFU/mL, and the EU (12%) treatment at 4.64×10^{-7} CFU/mL.

The lowest microbial count was found in the AU (0%) treatment at 2.93×10^{-7} CFU/mL, which was not significantly different from the DU (9%) treatment at 3.11×10^{-7} CFU/mL and

was relatively close to the EU (12%) treatment at 4.64×10^{-7} CFU/mL. However, it was significantly lower compared to the BU (3%) treatment and the CU (6%) treatment. Increasing the concentration of pandan leaf extract resulted in a lower level of microbial contamination in the salted duck eggs in the CU and DU treatments. This is because pandan leaf extract contains pharmacologically active compounds. However, in the EU (12%) treatment, the number of viable microbes increased. This is consistent with Fitri *et al*., (2016), who noted that the plant contains antimicrobial compounds such as essential oils, flavonoids, and alkaloids. Observations indicate that higher concentrations of pandan leaf extract provide greater antimicrobial inhibition. The bioactive compounds in pandan leaves, including flavonoids, polyphenols, tannins, saponins, essential oils, and alkaloids, are known for their antimicrobial effects. According to Sulistyawati (2009), flavonoids, tannins, and saponins have pharmacological effects as antimicrobials. Flavonoids, in particular, can form complexes with proteins in the microbial cell membrane, leading to cell lysis and preventing microbial growth. The increase in microbial count in the EU (12%) treatment may be due to the washing process with clean water before immersion in the extract solution. Water may contain E. coli, which can contaminate the eggs and damage them. The loss of the cuticle layer makes it easier for microorganisms to enter the egg.

Organoleptic Test

The organoleptic test is used to assess the panelists' responses to a food product. The organoleptic evaluation was conducted with four parameters: color, flavor, aroma, and texture.

1. Effect of Treatment on Color

Based on the conducted research, the average organoleptic color scores for salted duck eggs treated with fragrant pandan leaf extract (*Pandanus amaryllifolius*) at different concentrations are shown in Figure 3.

The analysis of variance for the color organoleptic test indicated that each treatment with different percentages of pandan leaf extract (0%, 3%, 6%, 9%, and 12%) had a highly significant effect ($P < 0.01$) on the color organoleptic score of the salted eggs. The analysis shows that the panelists' preference for the color of the salted eggs ranged from 2.84 to 3.56, indicating a preference level of "somewhat liked," with an overall average score of 3.17, also falling in the "somewhat liked" range. This indicates that the addition of pandan leaf extract has a significant impact on the color of the salted duck eggs, and panelists generally rated the color as somewhat acceptable.

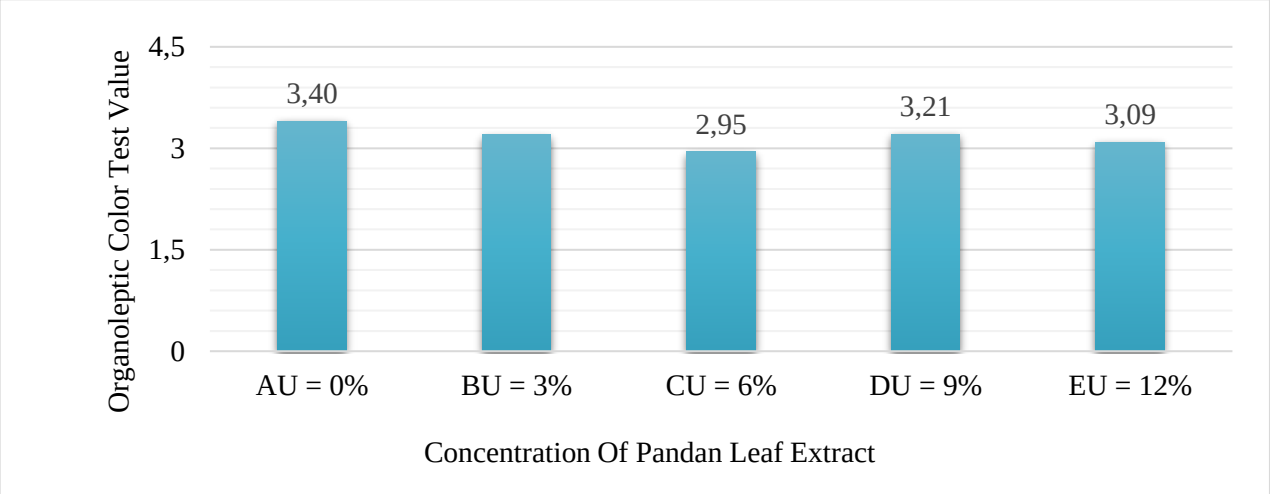

Figure 3. The Effect of Adding Fragrant Pandan Leaf Extract at Different Concentrations on The Organoleptic Color Test of Salted Duck Eggs Shows That The Effect is Not Significant.

Figure 3 shows that the highest acceptance for the color of salted duck eggs was found in the AU (0%) treatment with a score of 3.40, which was significantly different from the CU (6%) treatment at 2.95 and the EU (12%) treatment at 3.09, but not significantly different from the BU (3%) treatment at 3.20 and the DU (9%) treatment at 3.21. The addition of pandan leaf extract at varying concentrations resulted in a somewhat pale greenish color, which panelists did not favor. These findings align with Yossi (2014), who noted that the color of the egg yolk before salting is yellow, but after salting, it can change to shades of yellow-brown, dark brown, orange, or bright yellow. The color change is related to the loss of water and some fat from the yolk. Water content affects the concentration of pigments.

The presence of color compounds in pandan leaf extract, such as chlorophyll, which imparts a green color, can modify the color of food products. According to Sofiyanto (2011), pandan leaf contains chlorophyll that is commonly used for natural food coloring. The resulting egg white color is slightly greenish, while the salted egg yolk appears orange. This orange color formation is due to the loss of water from the yolk during immersion in the salt solution. The loss of water causes a change in the yolk's color (Hikmatun, 2016). A food product's acceptability is heavily influenced by its color, as an unattractive color or deviation from expected color can deter consumption, regardless of taste and texture (Noviyanti, 2017).

2. Effect of Treatment on Flavor

Based on the research conducted, the average organoleptic test scores for the flavor of salted duck eggs treated with fragrant pandan leaf extract (*Pandanus amaryllifolius*) at different concentrations are shown in Figure 4.

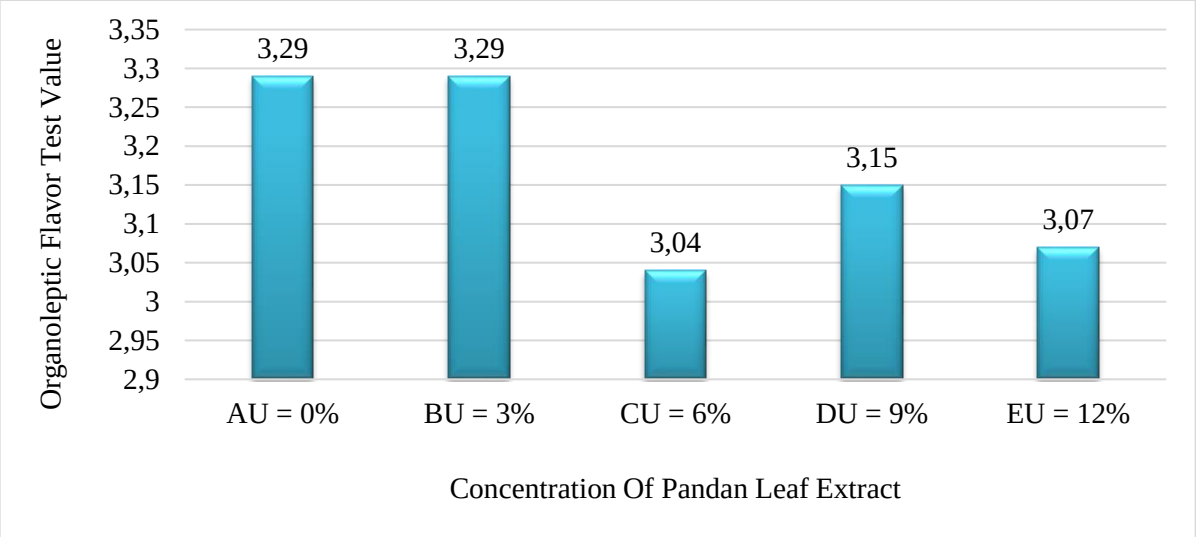

Figure 4. The Effect of Adding Fragrant Pandan Leaf Extract at Different Concentrations on The Organoleptic Flavor Test of Salted Duck Eggs Shows That The Effect is Not Significant.

The analysis of variance for the organoleptic flavor test of salted duck eggs with the addition of fragrant pandan leaf extract (*Pandanus amaryllifolius*) revealed that treatments with different concentrations of pandan leaf extract (0%, 3%, 6%, 9%, and 12%) did not have a significant effect ($P > 0.05$) on the flavor of the salted eggs. The organoleptic test results showed that the panelists' preference for the flavor of the salted eggs ranged from 2.88 to 3.56, indicating a "somewhat liked" level of acceptance, with an overall average score of 3.17.

Figure 4 shows that the highest flavor acceptance for salted duck eggs was found in the AU (0%) and BU (3%) treatments, both scoring 3.29. These treatments were significantly different from the CU (6%) treatment, which scored 3.04, and the EU (12%) treatment, which scored 3.07, but not significantly different from the DU (9%) treatment, which scored 3.15. The lowest flavor acceptance was observed in the CU (6%) treatment with a score of 3.04, which was significantly different from the AU (0%) treatment and BU (3%) treatment, but not significantly different from the EU (12%) treatment. The addition of pandan leaf extract homogenized with salt solution resulted in a salted flavor for the eggs.

As a single cell enclosed in a porous shell, the egg acts as a selectively permeable membrane with the yolk as the core. This allows the salt solution to diffuse into the egg through the shell because the concentration inside the egg is higher than outside, resulting in a salty taste. According to Asih *et al*. (2011), the reduction of water in salted eggs makes them more durable. Salt (sodium chloride) permeates the egg through the pores of the shell, moving from the egg white to the yolk. The chloride ions (Cl^-) from the salt act as preservatives by inhibiting microbial growth. The longer the egg is immersed in the solution, the more salt enters, making the egg more preserved and salty.

3. Effect of Treatment on Aroma

Based on the research conducted, the average organoleptic test scores for the aroma of salted duck eggs treated with fragrant pandan leaf extract (*Pandanus amaryllifolius*) at different concentrations are shown in Figure 5. The analysis of variance for the organoleptic aroma test indicates that treatments with different concentrations of pandan leaf extract (0%, 3%, 6%, 9%, and 12%) did not have a highly significant effect (P <0.01) on the aroma of the salted eggs. The organoleptic test results showed that the panelists' preference for the aroma of the salted eggs ranged from 2.56 to 3.32, indicating a "somewhat liked" level of acceptance, with an overall average score of 2.96.

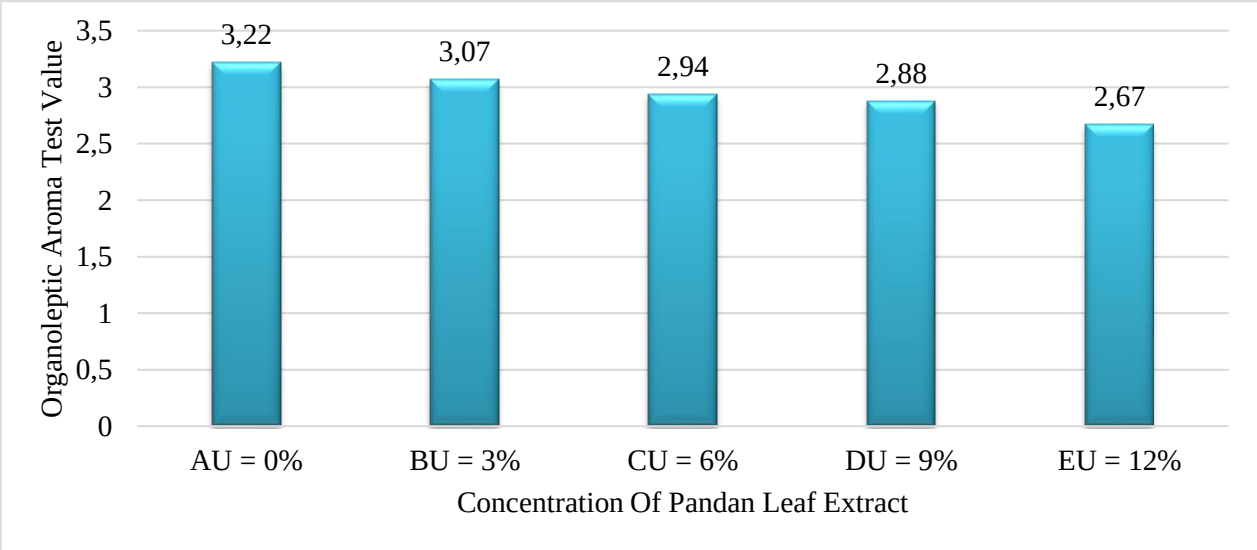

Figure 5. The Effect of Adding Fragrant Pandan Leaf Extract at Different Concentrations on The Organoleptic Aroma Test of Salted Duck Eggs Shows That The Effect is Not Significant.

Figure 5 illustrates that the highest acceptance of aroma for salted duck eggs was found in the AU (0%) treatment, with a score of 3.22. This was significantly different from the CU (6%) treatment, which scored 2.94, the DU (9%) treatment, which scored 2.88, and the EU (12%) treatment, which scored 2.67. However, the AU (0%) treatment did not differ significantly from the BU (3%) treatment, which scored 3.07. The lowest aroma acceptance was observed in the EU (12%) treatment, with a score of 2.67. This was significantly different from the AU (0%) treatment, which scored 3.22, and the BU (3%) treatment, which scored 3.07. However, it was not significantly different from the CU (6%) treatment, which scored 2.94, and the DU (9%) treatment, which scored 2.88.

The results indicate that higher concentrations of pandan leaf extract led to a lower panelist preference for the aroma of the salted eggs. The increased concentration of pandan leaf extract resulted in a more pronounced and distinctive pandan aroma, which panelists found less favorable compared to the treatment without pandan extract. The addition of pandan leaf extract aimed to reduce the fishy odor of the salted eggs. This is consistent with Cahyono *et al*., (2022),

who stated that pandan leaf extract can help eliminate the fishy odor in eggs due to its aromatic compounds, although prolonged storage may still affect the aroma.

4. Effect of Treatment on Texture

Based on the research conducted, the average organoleptic test value for the taste of salted duck eggs with the addition of pandan leaf extract (*Pandanus Amaryllifolius*) in different concentrations of brine can be seen in Figure 6. The results of the analysis of variance for the organoleptic taste of salted eggs with the addition of pandan leaf extract show that each treatment with different percentages of pandan leaf extract (0%, 3%, 6%, 9%, and 12%) had a significant effect (P>0.05) on the organoleptic test value for the aroma of salted eggs. The results of the organoleptic texture test for salted eggs with the addition of pandan leaf extract indicate that the panelists' preference scores ranged from 2.72 to 3.40 (a somewhat favorable acceptance level) with an overall average of 3.05 (somewhat favorable acceptance level).

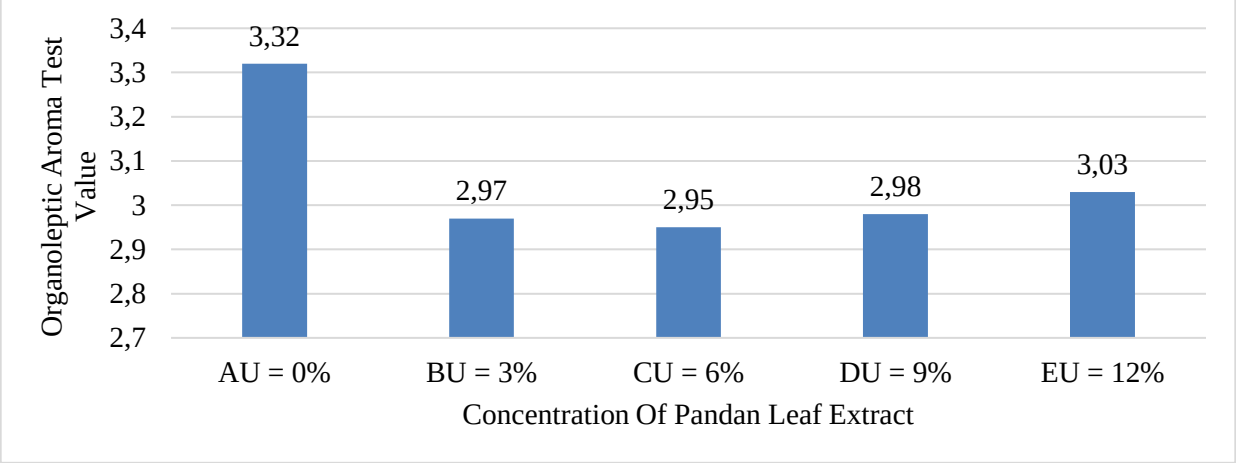

Figure 6. The Effect of Adding Fragrant Pandan Leaf Extract at Different Concentrations on The Organoleptic Texture Test of Salted Duck Eggs Shows That The Effect is Not Significant.

Figure 6 shows that the highest acceptance of texture was found in treatment AU (0%), with a score of 3.32, which was significantly different from treatment BU (3%), with a score of 2.97, treatment CU (6%), with a score of 2.95, and treatment DU (9%), with a score of 2.98, but not significantly different from treatment EU (12%), with a score of 3.02. As the concentration of pandan leaf extract increased, the texture became more chewy, and panelists preferred the product without the addition of pandan leaf extract. According to Siti Zulaekah (2010), the factor affecting the chewiness of salted eggs is due to the coagulation of egg whites during the heating process, with coagulation occurring at temperatures between 60-70°C.

The lowest acceptance was found in treatment CU (6%), with a score of 2.97, which was not significantly different from treatment BU (3%), with a score of 2.97, treatment DU (9%), with a score of 2.98, and treatment EU (12%), but significantly different from treatment AU (0%), with a score of 3.32. This study indicates that after boiling, the yolk of the egg becomes firm. According to Fitri (2023), salted eggs boiled for 15 minutes after the water has boiled have

an organoleptic quality of chewy egg white texture, somewhat firm yolk, salty taste, fishy smell, white color in the egg white, and dark yellow color in the yolk, are easy to peel, and not sticky. Therefore, the boiling time also affects the texture of salted eggs.

CONCLUSION

The results of the research can be summarized as follows: the addition of pandan leaf extract has a significant effect on the organoleptic tests of salted eggs. The best treatment for the organoleptic tests of aroma and taste was found at a concentration of 3%, while the best treatment for the organoleptic test of texture was at a concentration of 12%, and for color at a concentration of 9%. The best treatment for weight loss was observed at a concentration of 6%, and for total microbial count at a concentration of 3%.

REFERENCES

Ahmad, A., & Kadir, M.J. (2020). Evaluation of calcium and phosphorus levels in salted duck eggs with the addition of pandan leaf extract at different concentrations. *Jurnal Bionature, 21*(1), 23-30.

Ardiyansyah, F. (2019). Analysis of the added value of duck eggs into salted eggs (Case Study at Home Industry Owned by Mrs. Juhartatik). Accessed June 10, 2024.

Asih, W., & Sugiarto. (2011). The effect of carrageenan and granulated sugar concentrations on the physicochemical and organoleptic properties of Alang-Alang (*Imperata Cylindrica* L) P. Beauv) Jelly Drink. Undergraduate Thesis, Widya Mandala Catholic University Surabaya.

Cahyono, E., Novieta, I.D., & Fitriani. (2022). Analysis of pH and protein content in salted duck eggs with the addition of pandan leaf extract (*Pandanus Amaryllifolius*) at different concentrations. *Tarjih Tropical Livestock Journal, 2*(2), 2798-3080.

Fitri, C.R., Fitrianingsih, S.P., & Suwender. (2016). Evaluation of the antifungal activity of ethanol extract of pandan leaf (*Pandanus amaryllifolius Roxb*) against C. albicans in vitro.

Fitri, N.S. (2023). The effect of temperature and soaking time on the sensory and chemical properties of salted chicken eggs. Thesis. Agricultural Product Technology Program, Faculty of Agriculture and Postgraduate Studies, University of Lampung.

Harmayanda, D., Rosyidi, O., & Sjofjan. (2016). Evaluation of egg quality from the provision of various types of commercial layer feed. *JPLA, 7*(1), 25-32.

Hikmatun, M. (2016). Determination of shelf life for salted eggs using liquid smoke from coconut shells. Thesis. Faculty of Engineering, Pasundan University.

Ganesan, P., Kaewmanee, T., Benjakul, S., & Baharin, B.S. (2014). Comparative study on the nutritional value of pidan and salted duck eggs. *Korean Journal for Food Science of Animal Resources, 34*(1), 1.

Kaewmanee, T., Benjakul, S., & Visessangun, W. (2011). Effects of salting processes and time on the chemical composition, textural properties, and microstructure of cooked duck eggs. *J Food Sci*, *76*(Sup 2), 139-147.

Mardiyaningsih, A., & Aini, R. (2014). Development of the antibacterial potential of pandan leaf extract (Pandanus amaryllifolius Roxb). *Pharmaciana, 4*(2), 185-192.

Noviyanti. (2017). Textile dyes still found in street food in Bali. https://regional.kompas.com/. Accessed July 20, 2024.

Pires, P.G.S., Machado, G.S., Franceschi, C.H., Kindlein, L., & Andretta, I. (2019). Rice protein coating in extending the shelf-life of conventional eggs. *Poultry Science, 98*(4), 1918-1924.

Ramli, I., & Wahab, N. (2020). Technology of making salted eggs using the osmotic pressure method. *Jurnal Teknologi*, *15*(2). ISSN 1907-0772.

Rokana, E. (2018). Diversification of salted egg products through the addition of herbal plants and roasting processes. *Jurnal Dedikasi, 15*, 90-99.

Silalahi, M. (2018). Pandanus amaryllifolius Roxb (utilization and potential as a food preservative). *Jurnal Pro-Life, 5*(3), 626-636.

Susila, A.A., & Rofi'i, M. (2020). The potential of duck farming to increase the income of Selokgondang village residents. *Iqtishodiyah: Journal of Islamic Economics and Business, 6*(2), 109-133. ISSN 2460-5956.

Sulistyawati, D., Mulyati, S. (2009). Antifungal activity test of cashew leaf infusion (Anacardium occidentale L) against Candida albicans. *Jurnal Biomedika, 2*(1).

Usman, A. (2016). Building the economy from animal husbandry. *Agroinfo Galuh, 11*(2), 555-563.

Yosi, F., Hidayah, N., Jurlinda, & Sari, M.L. (2016). Quality of pegagan ducks processed using palm oil frond ash and liquid smoke. *Buletin Peternakan, 40*(1), 66-67.

Yosi, F. (2014). Physical quality of pegagan duck eggs preserved with various concentrations of liquid smoke and storage duration. *Proceedings of the National Seminar*, Faculty of Agriculture, Sriwijaya University, Palembang.

Yulia, I., Isyanto, A.Y., & Andrie, B.M. (2024). Analysis of raw material availability and feasibility of salted egg agroindustry in Pakemitan Village, Cikatomas District. *Agroinfo Galuh, 11*(2), 555-563.