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UTILIZATION OF CHITOSAN EDIBLE COATING FROM WHITELEG SHRIMP (*Litopenaeus vannamei)* WASTE ON THE SHELF LIFE OF SALTED EGGS

Pemanfaatan *Edible Coating* Kitosan Limbah Udang Vaname (*Litopenaeus vannamei*) Terhadap Umur Simpan Telur Asin

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ABSTRACT

Salted eggs are eggs preserved by salting. A common problem faced by salted egg producers is their short shelf life. This study aims to determine the best concentration of whiteleg shrimp chitosan as an edible coating in maintaining the quality of salted eggs during room temperature storage. This study used a completely randomized design (CRD)two replications with shrimp chitosan concentrations consisting of 0%, 2%, 4%, and 6% with a storage period of 28 days. The method used in this study was a laboratory-scale experimental method. This study was conducted in three stages: making the edible coating, coating, and storing the salted eggs. Shrimp chitosan edible coating was characterized by a viscosity test. Salted eggs that had been coated with chitosan edible coating were tested for weight loss, organoleptic, proximate, TPC (Total Plate Count), and Bayesian test. Based on the results of the study, the best treatment was at a chitosan concentration of 6% with an aroma value of 5.98; texture 6.03; color 5.55; and taste 5.57. The proximate test of salted eggs from the best treatment contained water content of 52.59%, protein 13.42%, fat 19.83%, and ash 2.84%. The weight loss test of the best treatment was 0.005% and the TPC had a value of 1.55×10^3 CFU/g at the end of storage.

Keywords: Chitosan, Edible Coating, Salted Eggs, Whiteleg Shrimp (*Litopenaeus vannamei*)

ABSTRAK

Telur asin adalah telur yang diawetkan dengan cara penggaraman. Masalah yang sering dihadapi oleh produsen telur asin yaitu umur simpan telur asin yang pendek. Penelitian ini bertujuan untuk menentukan konsentrasi kitosan udang vaname terbaik sebagai *edible coating* dalam mempertahankan mutu telur asin selama penyimpanan suhu ruang. Rancangan penelitian ini menggunakan rancangan acak lengkap (RAL) dua ulangan dengan konsentrasi kitosan udang vaname yang terdiri dari 0%, 2%, 4% dan 6% dengan lama penyimpanan selama 28 hari. Metode yang digunakan pada penelitian ini adalah metode ekperimental skala laboratorium. Penelitian ini dilakukan dalam tiga tahap yaitu pembuatan *edible coating*, pelapisan dan penyimpanan telur asin. *Edible coating* kitosan udang dikarakterisasikan dengan uji viskositas. Telur asin yang sudah dilapisi *edible coating* kitosan dilakukan pengujian susut bobot, organoleptik, proksimat, TPC (*Total Plate Count*) dan uji *bayes*. Berdasarkan hasil penelitian, perlakuan terbaik terdapat pada konsentrasi kitosan 6% dengan nilai aroma 5,98; tekstur 6,03; warna 5,55; dan rasa 5,57. Uji proksimat telur asin dari dengan perlakuan terbaik mengandung kadar air sebesar 52,59%, protein 13,42%, lemak 19,83%, dan abu 2,84%. Uji susut bobot perlakuan terbaik yaitu sebesar 0,05% dan TPC memiliki nilai 1,55×10^3 CFU/g pada akhir penyimpanan.

Kata Kunci: *Edible Coating*, Kitosan, Telur Asin, Udang Vaname (*Litopenaeus vannamei*)

INTRODUCTION

Salted eggs are eggs preserved by salting. Duck eggs are commonly used to make salted eggs. Based on duck egg production data from the Central Statistics Agency (2023), Banten Province produces 22,300.2 tons of duck eggs per year. Salting eggs aims to create a distinctive flavor, remove fishy aftertaste, increase economic value, and extend the egg's shelf life (Fatimah et al., 2014).

A common problem faced by salted egg producers is the short shelf life of salted eggs. Novia et al. (2012) stated that the quality of ordinary boiled salted eggs can only be maintained for 7 days after boiling for 15 minutes. This can result in significant losses if the product is not sold immediately. Deterioration of salted eggs is caused by contamination by microorganisms entering through the pores of the shell and water evaporation, which causes a decrease in the egg's weight. Efforts to extend the shelf life of salted eggs can be done using preservatives. Preservatives should preferably be sourced from natural sources. One of the natural preservatives used is chitosan (Vatria et al., 2021).

Chitosan is a polysaccharide obtained from the deacetylation of chitin, which is generally derived from crustacean skin waste. Whiteleg shrimp shells contain protein, calcium carbonate, chitin pigments, minerals, and other compounds, making them suitable for processing into chitosan (Ardhiansyah et al., 2024). Chitosan is relatively more reactive than chitin and is easily produced in powder, paste, film, and fiber forms. Chitosan has extensive uses in everyday life, including as a food preservative, antioxidant, fat absorbent, antimicrobial, and in the medical field, as surgical suture (Sarwono R, 2010).

One use of shrimp shell chitosan is as a natural packaging material in the form of edible coating. The primary mechanism of edible coating in food is to improve quality and extend shelf life by acting as a barrier to oxygen and water and slowing bacterial growth (Vatria et al., 2021). Edible coating made from chitosan from white shrimp shells has great potential as an antimicrobial agent, as chitosan contains the enzyme lysozyme and aminopolysaccharide groups, which can inhibit microbial growth (Suherman et al., 2018).

The purpose of this study was to determine the best concentration of whiteleg shrimp (*Litopenaeus vannamei*) chitosan as an edible coating to maintain the quality of salted eggs during room temperature storage.

RESEARCH METHODS

Research Time and Location

This research was conducted from July 2024 to January 2025. Edible coating production, organoleptic testing, and weight loss tests were conducted at the Aquatic Product Processing Technology (TPHP) Laboratory, Fisheries Science Study Program, Faculty of Agriculture, Sultan Ageng Tirtayasa University. Total Plate Count (TPC) tests, proximate tests, and storage were conducted at the Tangerang City Fisheries Product Quality Testing and Implementation Unit (UPTD). Viscosity tests for chitosan edible coating were conducted at the Biotech Center Laboratory, Bogor Agricultural University.

Equipment and Materials

The equipment used in this research included a hot plate, beaker glass (Iwaki, Indonesia), magnetic stirrer, analytical balance (Kern, Germany), thermometer, Pyrex measuring cylinder, oven (MEMMERT, Germany), 1 mL volumetric pipette, baking pan, petri dish, micropipette, test tube, Pyrex Erlenmeyer flask, Bunsen burner, gloves, LAF (Laminar Air Flow), vortex, and incubator (MEMMERT, Germany). The materials used in this study were salted eggs obtained from the Abah Sarip Salted Eggs MSME in Serang City, commercial chitosan from whiteleg shrimp (*Litopenaeus vannamei*) obtained from CV Multiguna, 1% acetic acid, and Plate Count Agar (PCA).

Research Design

This study used a Completely Randomized Design (CRD) with two replications, using chitosan concentrations of 0%, 2%, 4%, and 6% as the edible coating for the salted eggs, with a storage period of 28 days.

Research Procedure

Edible Coating Preparation

The edible coating from chitosan was prepared using the method of Dewanti (2016). Edible coating with chitosan concentrations (2%, 4%, and 6%) (w/v) was prepared by dissolving chitosan in a total volume of 500 mL of 1% acetic acid and stirring at 40°C for 1 hour or until the solution was completely suspended.

Edible Coating and Storage of Salted Eggs

The edible coating technique for salted eggs was based on the method of Rahadis (2011). The salted eggs were dipped twice using different chitosan concentrations: 0%, 2%, 4%, and 6%. The dipping was carried out for 30 seconds. The samples were stored at room temperature and observed weekly for a month. These observations included TPC (Tightness Percentage), while proximate testing and weight loss were conducted on the first and last days. Organoleptic testing was conducted on the last day of storage.

Testing Procedure

Viscosity Test

The viscosity test was based on the research method of Apriyanti & Fithriyah (2013). The viscosity of the edible coating solution was measured using a Brokefield Model DV I Prime. The solution to be measured was placed in a 100 mL beaker. Determine the appropriate spindle number according to the solution's viscosity, starting from the smallest spindle number to the largest. Afterward, dip the spindle into the solution whose viscosity is to be measured and adjust the viscometer height until the dip mark is reached. The test is performed at a speed of 1.5 rpm for one minute, then record the viscosity value displayed on the layer. Viscosity values are expressed in centipoise (cP).

Organoleptic Testing

Organoleptic testing refers to the method of Setyaningsih et al. (2014). The organoleptic test used is a hedonic scale that includes preferences for aroma, texture, color, and taste. The hedonic test uses a scoring test on a scale of 1 to 9 (1: Dislike extremely, 2: Dislike extremely, 3: Dislike slightly, 4: Dislike slightly, 5: Fairly or neutral, 6: Like slightly, 7: Like, 8: Like very much, and 9: Like extremely) and a panel of 30 trained panelists.

Proximate Testing

The proximate testing in this study refers to the AOAC (2005). This proximate testing was used to determine the chemical composition of salted eggs coated with edible chitosan coating from white shrimp stored for 28 days. This testing included ash, moisture, fat, and protein content.

Total Plate Count (TPC) Test

The TPC test on salted eggs follows the method of Sari (2015). Salted eggs are tested for TPC to determine the level of quality deterioration on a microbial scale. A 5 g sample is taken and dissolved in 45 mL of Buffer Peptone Water (BPW) diluent, then crushed and homogenized with a stomach. 1 mL of the diluted sample is taken and dissolved in 9 mL of BPW, then homogenized using a vortex (10^{-1}). 100 µL of each dilution is pipetted into a Petri dish containing solidified Plate Count Agar (PCA) media. A hockey stick is dipped in 95% alcohol and ignited to burn off the alcohol. The sample is spread evenly over the media using the cooled hockey stick, and the Petri dish is rotated on a table. The Petri dish is then incubated at 35°C for 24-48 hours. Colonies growing on Petri dishes were counted, with an acceptable number of 25-250 colonies per dish. After the incubation period, the number of colonies growing on the plates was calculated using the formula:

$$N= \frac{\sum C}{[(1\times n1)+(0,1\times n2)\times(d)]}$$

Where:
N = Number of product colonies expressed as colonies per g
ΣC = Number of plates in all plates counted
n1 = Number of plates in the first dilution calculated
n2 = Number of plates in the second dilution calculated
d = First dilution used

Weight Loss Test

Changes in the weight of salted eggs can be observed using the method of Purnomo et al. (2017), who measured the weight of salted eggs coated with edible coating before storage (initial weight) and the weight of salted eggs coated with edible coating (final weight). The following equation is used to calculate weight change:

$$\text{Weight loss (\%)} = \frac{\text{Initial weight (g)} - \text{final weight (g)}}{\text{Initial weight}} \times 100\%$$

Bayes Test

The Bayes test was used to determine the best treatment based on the research data. The Bayes test refers to research by Yuriyan et al. (2025). The Bayes method was obtained from questionnaires from 30 panelists. The parameters used for the Bayes test were weight loss, organoleptic testing, proximate testing, and TPC (Total Plate Count) testing. Bayesian calculations can use the following equation:

$$p(E|F)\,\frac{p(F|E)\times p(E)}{p(F)}$$

Where:
p(E | F) = Probability of hypothesis A occurring if evidence B occurs
p(F | E) = Probability of evidence B occurring if hypothesis A occurs
p(E) = Probability of hypothesis A without any evidence involved
p(F) = Probability of evidence B without any hypothesis involved

Data Analysis

Data obtained from the organoleptic test results were analyzed using a non-parametric statistical test with the Kruskal-Wallis test. If significant differences were identified, the Mann-Whitney test was used. Data obtained from the viscosity, weight loss, and proximate variables such as ash content, moisture content, fat content, protein content, and TPC were analyzed using analysis of variance (ANOVA). Results of the analysis that had a significant effect were further tested using the Duncan's Multiple Range Test (DMRT). The DMRT test further determined differences between treatments at a 5% significance level. This study used Microsoft Excel and SPSS version 20.0. For data analysis, the overall results were presented in graphs and tables, and explained descriptively and comparatively. The Bayesian test was used to determine the best treatment, with values weighted based on the importance of each test.

RESULT

Viscosity Test Results for Chitosan Edible Coating for Whiteleg Shrimp

This viscosity test was conducted to determine the viscosity of the edible coating used on salted eggs. A viscosity analysis graph for each concentration can be seen in Figure 1 below.

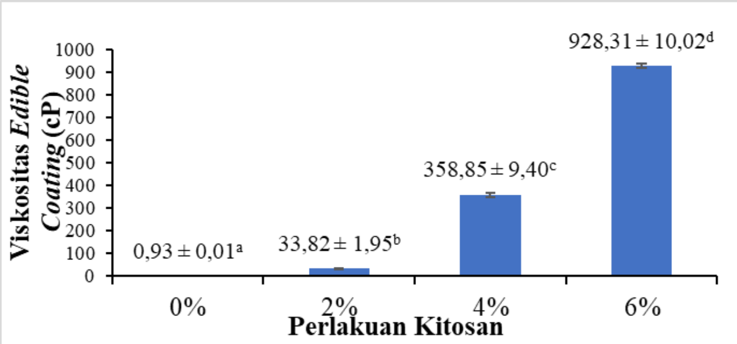

Figure 1. Average Viscosity Value of Chitosan Edible Coating for Whiteleg Shrimp

Weight Loss Test Results for Salted Eggs

The weight loss test for salted eggs coated with chitosan for whiteleg shrimp was used to determine the initial and final weights after storage at room temperature. The weight loss test graph for edible coating for salted eggs can be seen in Figure 2.

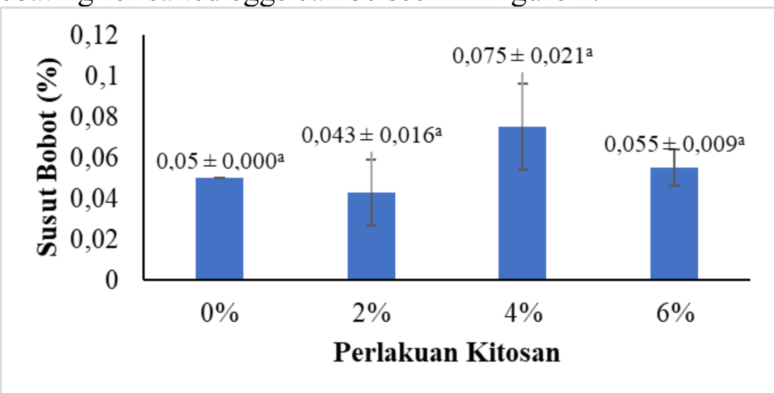

Figure 2. Average Weight Loss Value for Salted Eggs

Organoleptic Test Results for Salted Eggs

Aroma

The sample was likely to be preferred by panelists if the aroma matched their preferences. The aroma of salted eggs with shrimp chitosan edible coating added after 28 days of storage can be seen in Figure 3.

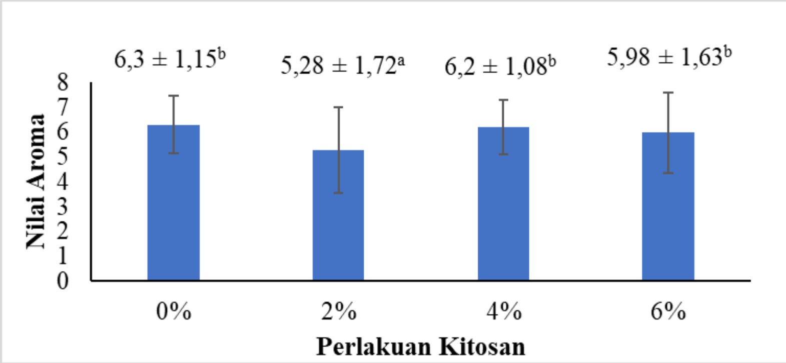

Figure 3. Average Aroma Value of Salted Eggs on Day 28

Texture

The texture and consistency of the material will affect its flavor. The average texture value can be seen in Figure 4.

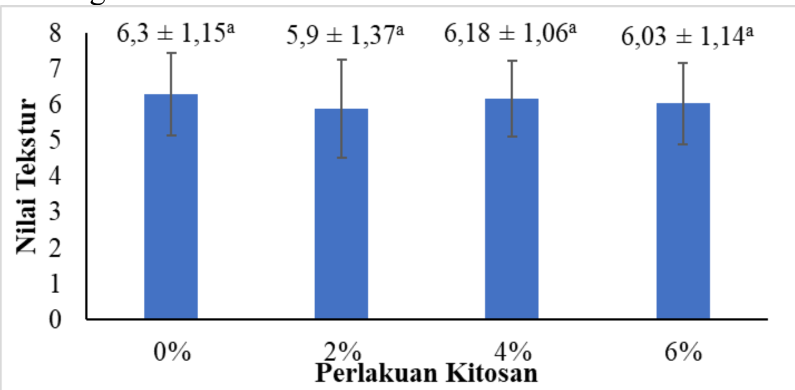

Figure 4. Average Texture Value of Salted Eggs on Day 28

Color

Color is an observation using the sense of sight (eyes) to assess the product's appearance. The average color value of salted eggs can be seen in Figure 5.

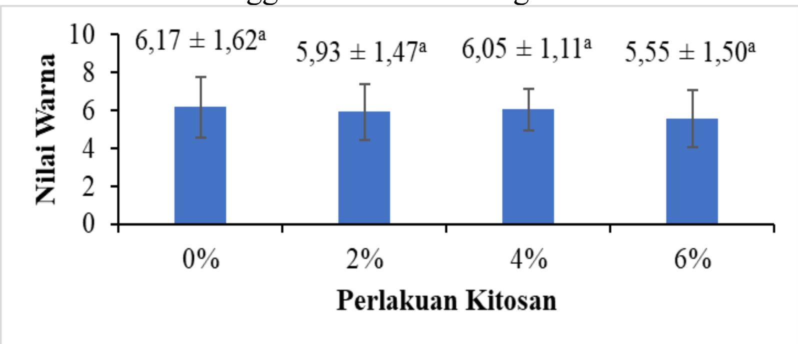

Figure 5. Average Color Value of Salted Eggs on Day 28

Taste

Salted eggs can be preferred by panelists if the flavor matches their preferences. The taste parameters of salted eggs with the addition of white shrimp chitosan edible coating can be seen in Figure 6.

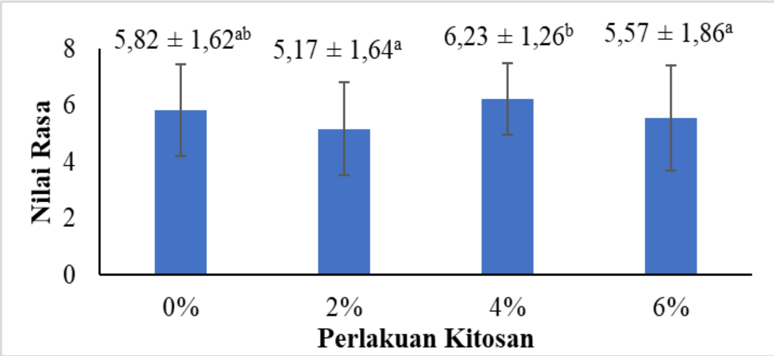

Figure 6. Average Taste Value of Salted Eggs on Day 28

Proximate Test Results of Salted Eggs

Moisture Content

Moisture content is an important parameter in determining the quality of salted eggs produced during storage. The average moisture content of salted eggs with the addition of edible chitosan coating for whiteleg shrimp can be seen in Figure 7.

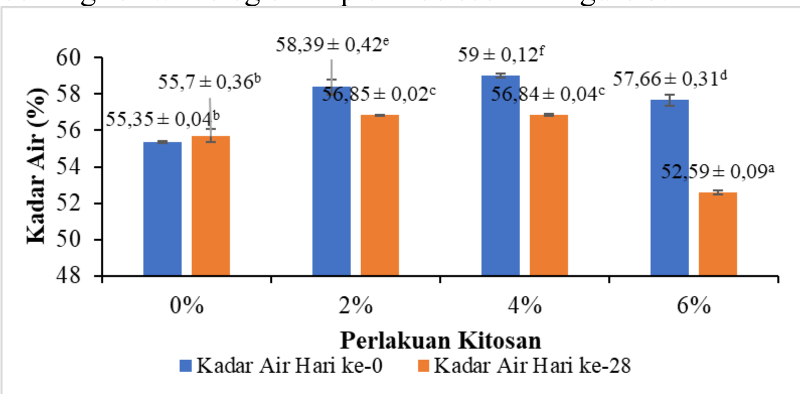

Figure 7. Average Moisture Content of Salted Eggs on Day 0 and Day 28

Ash Content

Ash content is a parameter used to determine the mineral content of a sample, indicating the success of the demineralization process (Molo et al., 2023). The average ash content of salted eggs with the addition of edible chitosan coating for whiteleg shrimp can be seen in Figure 8.

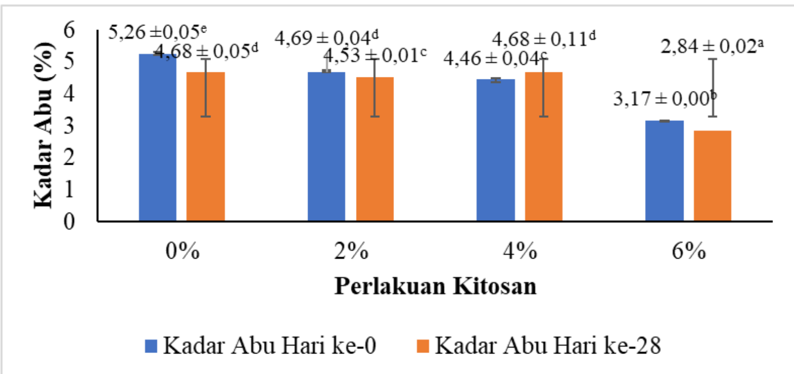

Figure 8. Average Ash Content of Salted Eggs on Day 0 and Day 28

Fat Content

Fat is an important factor that must be considered in food production because it can cause changes in the properties of the product, namely rancidity (Aminah et al., 2019). The average fat content of salted eggs with the addition of edible coating from whiteleg shrimp chitosan can be seen in Figure 9.

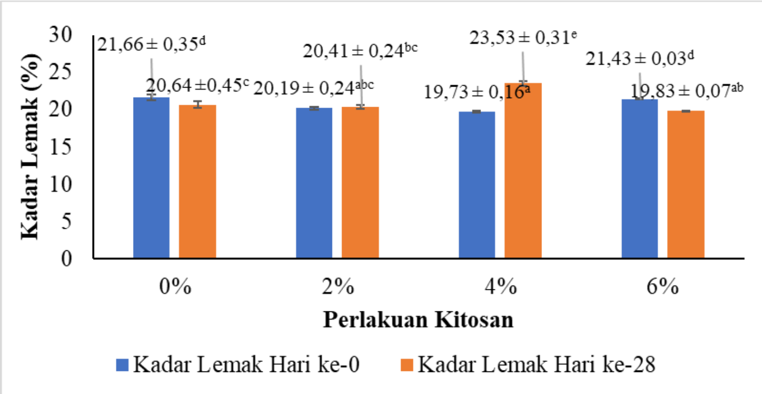

Figure 9. Average Fat Content of Salted Eggs on Day 0 and Day 28

Protein Content

The protein content of a food can changes due to the influence of its water content. The average protein content of salted eggs with the addition of edible coating from whiteleg shrimp chitosan can be seen in Figure 10.

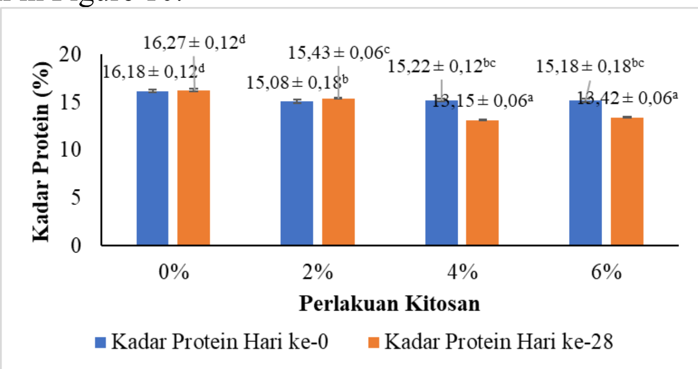

Figure 10. Average Protein Content of Salted Eggs on Day 0 and Day 28

Results of the Total Plate Count (TPC) Test for Salted Eggs

The TPC test in this study on the use of edible coating from whiteleg shrimp chitosan is necessary to determine the number of microbes in the salted eggs during storage. The average TPC value of salted eggs with the addition of edible coating from whiteleg shrimp chitosan can be seen in Table 1.

Table 1. Average TPC Value of Salted Eggs

Treatment	TPC (CFU/g)				
	Storage Time (days)				
	0	7	14	21	28
0%	1.4×10^3	1.7×10^3	2.0×10^3	2.3×10^3	2.4×10^3
2%	1.1×10^3	1.3×10^3	1.6×10^3	2.0×10^3	2.15×10^3
4%	9×10^2	1.05×10^3	1.05×10^3	1.05×10^3	1.85×10^3
6%	7×10^2	8.5×10^2	8.5×10^2	1.35×10^3	1.55×10^3

Bayes Test Results

This test used 30 panelists to provide the highest scores for the test parameters in this study, ranking them from most important to least important. The results of the Bayesian test for this study can be seen in Figure 11.

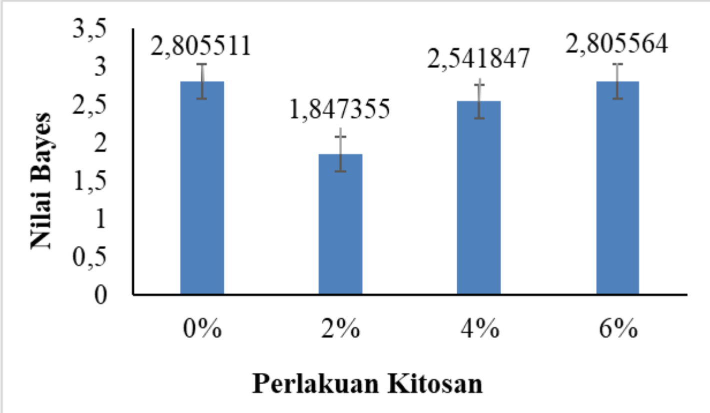

Figure 11. Bayes Test Value for Salted Eggs

DISCUSSION

Viscosity of Chitosan Edible Coating for Whiteleg Shrimp

The results showed that the addition of chitosan significantly affected the viscosity of the edible coating at $p<0.05$. The viscosity of the edible coating in this study ranged from 0.93 cP to 928.31 cP. The highest viscosity was 928.31 cP with 6% chitosan addition, while the lowest viscosity was 0.93 cP with 0% chitosan addition. The viscosity of the edible coating increased with increasing chitosan concentration. This edible coating viscosity had a higher average value than the study by Herdiana et al. (2023), which found the highest viscosity value for the edible coating using glucomannan from porang tubers, at 797.19 cP at 6%.

Weight Loss of Salted Eggs with Chitosan Edible Coating for Whiteleg Shrimp

The results showed that the addition of chitosan edible coating had no significant effect on the weight loss of salted eggs ($p>0.05$). This means that different chitosan concentrations resulted in relatively similar weight loss values. The weight loss of salted eggs in this study was relatively similar because the weight loss of salted eggs coated with chitosan edible coating at different concentrations did not differ significantly. The average weight loss of salted eggs in this study was lower than that of Masyitah et al. (2023), which had the highest weight loss value of 0.694% for salted eggs.

Organoleptic Edible Salted Eggs with Chitosan Edible Coating for Whiteleg Shrimp

The aroma results showed that the addition of chitosan edible coating significantly affected the aroma of salted eggs ($p<0.05$). The aroma values for these salted eggs ranged from 5.28 to 6.30 (neutral-slightly pleasant). The aroma value in this study averaged lower than the results of Suharto et al. (2024), which ranged from 6.66 to 7.13 for boneless milkfish coated with chitosan carrageenan edible coating with turmeric. The addition of chitosan edible coating caused a decrease in salted egg preferences because the coating had a slightly sour aroma. This is suspected because the higher the concentration of chitosan edible coating applied, the panelists' acceptance of aroma parameters decreased. This was also true without the addition of shrimp chitosan. Sheykhjan et al. (2025) stated that using acetic acid as an edible coating can lower the surface pH of food.

The results of the salted egg texture showed that the addition of chitosan edible coating at the end of 28 days of storage at room temperature had no significant or equal effect on the salted egg texture value ($p>0.05$). This means that all treatments had relatively similar textures. The texture value in this study was not significant because the panelists' responses to all salted egg treatments had the same texture, namely chewy and dense. This is consistent with research by Sidik et al. (2022) which used chitosan edible coating on rimau gerga lebong (RGL) oranges and found that oranges with chitosan concentration were denser than the control treatment, which had a soft texture.

The results of the salted egg color showed that the application of chitosan edible coating at the end of 28 days of storage at room temperature had no significant or equal effect on the color value of the salted eggs ($p>0.05$). This means that all treatments had relatively similar color. The color value in this study was not significant because the panelists' response or acceptance of the salted eggs with and without chitosan treatment was similar, with a white color and a bright yolk on the 28th day of storage.

The results of the salted egg taste showed that the application of chitosan edible coating had a significant effect on the taste value of the salted eggs ($p<0.05$). The taste parameter value of the salted eggs ranged from 5.17 to 6.23 (neutral-slightly liked). The taste value in this study had a higher average compared to the results of Nursiwi et al. (2013) research which ranged from 2.55 - 3.95 (dislike - neutral) in salted eggs with liquid smoke immersion treatment during the fermentation process. The 4% whiteleg shrimp chitosan treatment had the highest value with an average of 6.30. The 4% treatment was preferred by the panelists because it did not change the taste of salted eggs that had been stored for 28 days. The same condition also occurred in the study of Yahya et al. (2015) that the addition of edible chitosan coating did not change the distinctive taste of sticky rice dodol. Marganingsih and Putra (2021) stated that shrimp chitosan coating prevents contamination from microorganisms and prevents loss of food quality caused by mass transfer such as moisture, gas and taste.

Proximate Analysis of Edible Chitosan Coating for Whiteleg Shrimp Salted Eggs

The results of the salted egg moisture content analysis showed that the use of edible chitosan coating significantly affected the salted egg moisture content during room temperature storage ($p<0.05$). The average water content of salted eggs with increasing chitosan concentration decreased significantly until the end of 28 days of room temperature storage. The average water content in this study was lower than that of the salted eggs studied by Allismawita et al. (2016) with aloe vera coating, which was 65.75%. The decrease in water content in salted eggs with increasing chitosan concentration occurred due to transpiration and respiration processes in the salted eggs during storage at room temperature. Walke et al. (2014) reported that chitosan is a hygroscopic compound, meaning it can absorb water naturally, thus allowing chitosan to absorb water during storage.

The results of the ash content of salted eggs indicate that the use of chitosan edible coating significantly affected the ash content during room temperature storage ($p<0.05$). The highest ash content in this study was higher than that of Faruq et al. (2021), which found the highest average ash content of 0.91% with the addition of bay leaf extract. The decrease in ash content in salted eggs with increasing chitosan concentration occurred because the chitosan edible coating has adsorbent properties and acts as a barrier for the salted eggs during storage at room temperature. This is in line with the research of Ifa et al. (2019), which stated that the higher the chitosan concentration, the greater the absorption of ions.

The results of the fat content of salted eggs showed that the use of chitosan edible coating significantly affected the fat content during room temperature storage ($p<0.05$). The highest average fat content of salted eggs in this study was higher than that of Pratiwi et al. (2023), which used a cherry leaf solution during the fermentation process, with an average fat content of 15.53%. The decrease in fat content in salted eggs with increasing chitosan concentration occurred because chitosan has adsorbent properties on salted eggs during storage at room temperature. According to Mardyaningsih et al. (2014), chitosan can adsorb fat, and chitosan fibers act as positive ions, allowing chitosan to chemically bind fat. This is consistent with the study by Rohsarifuddin et al. (2023), which showed a decrease in fat content in katsuobushi with the addition of chitosan coating and basil essential oil.

The results of the salted egg protein content showed that the use of edible chitosan coating significantly affected the protein content of salted eggs during storage at room temperature ($p<0.05$). The protein content of salted eggs with increasing chitosan concentration experienced a significant decrease until the end of 28 days of room temperature storage. The highest average protein content in this study was lower than the study by Pratiwi et al. (2023) with an average value of the highest protein content of 17.26% in salted eggs coated with cherry leaf solution. This difference is caused by chitosan having adsorbent properties on salted eggs during room temperature storage so that the protein content decreased. This is in accordance with the study by Mardyaningsih et al. (2014) which showed a decrease in protein content by using chitosan on fresh anchovies. Restuaji & Oktavia (2020) reported that protein adsorption on chitosan occurs chemically or chemisorption.

Total Plate Count (TPC) of Salted Eggs with Chitosan Coating for Whiteleg Shrimp

The TPC (Total Plate Count) of salted eggs showed that the use of chitosan edible coating had no significant effect on the TPC values of salted eggs in each treatment ($p>0.05$) during storage. These results align with the research of Wulandari et al. (2015), which demonstrated the use of chitosan coating with a 20% chitosan concentration in tuna fish balls, and the research of Vatria et al. (2021) which used a 3% chitosan edible coating. The average TPC values of salted eggs with and without chitosan concentrations experienced insignificant increases until the end of 28 days of room temperature storage. Salted eggs without chitosan edible coating for whiteleg shrimp exhibited faster bacterial growth than those with chitosan edible coating. This indicates that the use of chitosan as an edible coating for whiteleg shrimp can inhibit bacterial growth. Salted eggs with chitosan edible coating can suppress the rate of bacterial growth compared to salted eggs without chitosan treatment. Wulandari et al. (2015) stated that chitosan contains antibacterial substances called lysozyme enzymes and aminopolysaccharide groups that can inhibit bacterial growth.

Bayes Test

The Bayes test value for salted eggs ranged from 1.847355 to 2.805564. The 6% whiteleg shrimp chitosan concentration treatment had the highest Bayesian value, making it the best treatment in this study. According to Yuriyan et al. (2025), determining the weighting of values in the Bayesian test is based on confidence, experience, and trust. The 6% whiteleg shrimp chitosan concentration treatment was selected as the best concentration treatment because each test parameter had a high value determined by the panelists.

CONCLUSION

The best treatment of edible chitosan coating for whiteleg shrimp in maintaining the quality of salted eggs during storage in this study from physical, chemical and microbiological parameters is with 6% treatment. The organoleptic test of salted eggs with the best chitosan treatment has an assessment by the panelists that is "neutral-rather like", the proximate test of salted eggs with the best chitosan treatment contains water content of 52.59%, protein 13.42%, fat 19.83%, ash 2.84%, while the weight loss test of the best treatment is 0.055% and TPC which has a value of 1.55×10^3 CFU/g at the end of storage. Salted eggs with edible chitosan coating for whiteleg shrimp in this study can last for 28 days of shelf life and the quality of salted eggs is still good and suitable for consumption. However, as the storage period increases, there is still a gradual decline in quality.

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