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Physicochemical Properties of Goat Milk Dodol Fortified with *Eucheuma spinosum* Seaweed

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***Abstract**. This study aimed to evaluate the effect of adding Eucheuma spinosum seaweed on the quality of goat milk dodol on moisture, protein, fat, and color (L*, a*, b*). Goat milk was chosen due to its high nutritional value and better digestibility than cow milk, although its consumption in Indonesia remains limited because of its strong odor, while dodol, a traditional Indonesian confection with a chewy texture, was used as a base product to promote milk utilization. The research material was dodol made from goat milk, glutinous rice flour, sugar, and salt, with the addition of Eucheuma spinosum seaweed at concentrations of 0% (T0), 10% (T1), 20% (T2), and 30% (T3). The method used was a laboratory experiment employing a Completely Randomized Design (CRD) with four treatments and five replications. The obtained data were then analyzed using analysis of variance (ANOVA). If significant differences were found, the Duncan Multiple Range Test (DMRT) was conducted. The results showed a protein content value of 5.33%-6.37%. Fat content value of 11.96%-13.19%. Ash content value ranged from 1.49%-3.96%. Texture value ranged from 16.22 N-26.44 N. pH value ranged from 6.76-6.94. Color parameter value L* ranged from 39.65-45.39; a* 5.16-8.33; b* 21.16-22.71. Organoleptic value of texture 2.50-3.48; color 2.08-3.79; aroma 3.69-3.83; taste 3.02-3.47.*

***Keywords:** Binder, Gel formation, Goat milk dodol, Iota-carrageenan, Traditional food*

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INTRODUCTION

Goat's milk is an animal product containing essential nutrients for human health, but its utilization in various aspects is still limited (Budhi et al., 2020). This is due to the lower availability of goat's milk and product competition that is not as well developed as cow's milk (Setyawardani, 2017). These products have high nutritional value due to their balanced chemical composition. Goat's milk is composed of macronutrients such as 87.03% water, 4.14% fat, 3.56% protein, 3.2% lactose, and 0.82% total minerals (ash), as well as various vitamins as micronutrients that are easily absorbed by the body (Nurliyani, 2021). In many regions, the public perception of goaty flavor, short supply chains, and a lack of familiar product formats have constrained market expansion. Introducing goat's milk into well-known traditional foods is therefore a strategic route to broaden consumer acceptance and deliver its nutritional benefits to wider communities.

Dodol is a traditional food product made from glutinous rice flour, coconut milk, and sugar with the addition of permitted ingredients. Replacing coconut milk with milk in dodol processing is an innovation aimed at increasing the nutritional value of the product, so the result is known as milk dodol (Triawan et al., 2016). The development of milk dodol still faces obstacles in texture quality, especially hardness caused by the use of 100% glutinous rice flour (Hanggara et al., 2016). This is because the gelatinization of amylopectin forms a gel with a high viscosity, so that the product becomes dense and less flexible. This condition indicates the need for innovation to improve the texture of dodol, because texture is an important factor that determines consumer acceptance. Constraints in dodol texture can be overcome by adding ingredients that can increase its elasticity, softness, and tenderness. One ingredient that has proven effective is seaweed. This description is supported by the statement of Syahlan et al. (2023) that the addition of seaweed can produce a chewy texture in dodol due to its carrageenan content. Carrageenan is a hydrocolloid that can absorb water, thereby maintaining the chewy texture of dodol (Prastyawan et al., 2015). The water content in dodol significantly influences its final texture. Dodol will have a softer texture as the water content increases (Lukito et al., 2017). Based on these findings, seaweed has the potential to improve the texture of dodol.

Seaweed hydrocolloids offer a science-based solution to these limitations. Eucheuma spinosum is a carrageenophyte rich in iota-carrageenan, a sulfated galactan that forms soft, elastic gels in the presence of appropriate cations and water activity. Mechanistically, iota-carrageenan can interact with milk proteins and the starch matrix to modulate water binding, reduce serum separation, and generate a more cohesive, less brittle gel network attributes aligned with the target texture of high-moisture confections such as dodol (Prihastuti and Abdassah, 2019). Beyond techno-functionality, E. spinosum also contains dietary fiber and trace minerals that complement the macronutrient and micronutrient profile of goat’s milk.

Despite growing interest in hydrocolloid-fortified confectionery, the research gap remains clear: there is limited evidence on how substituting coconut milk with goat’s milk reshapes the starch, protein and hydrocolloid interactions in dodol, and the extent to which targeted levels of E. spinosum can correct the characteristic over hard texture and syneresis without compromising flavor and overall liking. Moreover, while several seaweed sources (e.g., agarophytes, other carrageenophytes) could be considered, the rationale for selecting E. spinosum is threefold: its iota-carrageenan predominance yields soft, elastic gels suited to confectionery; its wide availability and established supply chains in Indonesia support scalability and cost-effectiveness; and its functional synergy with dairy systems is well-documented for mitigating phase separation and improving moisture management during high-heat concentration (Prihastuti and Abdassah, 2019).

Therefore, this study aimed to evaluate the effect of fortifying goat-milk-based dodol with Eucheuma spinosum at graded levels on its physicochemical properties (moisture distribution, proximate composition, pH, instrumental color and texture) and sensory acceptance, and to identify the formulation that optimally balances texture improvement with overall liking and nutritional benefits.

LITERATURE REVIEW

Goat's milk is a white fluid from the udder glands of goats that is highly nutritious. It contains nutrients such as 3.6% protein, 4.0% fat, and 4.5% lactose, which are relatively higher than cow's milk, which contains 3.2% protein, 3.4% fat, and 4.6% lactose (Lad et al., 2017). Goat's milk has a distinctive, gamey aroma caused by its medium-chain fatty acid content, namely caproic acid (C6:0), caprylic acid (C8:0), capric acid (C10:0), and lauric acid (C12:0) (Setyawardani, 2017). Medium-chain fatty acids are easily absorbed by the body (Pajrin et al., 2025). Goat's milk contains high-value nutrients so it has the potential to be a nutritious food ingredient, although its aroma is still an obstacle to consumer acceptance. Goat's milk can be processed into milk dodol (Anggaeni and Pratama, 2021).

Milk dodol is a diversified product made from milk as a substitute for coconut milk. Kresityadi et al. (2017) stated that milk, as the main ingredient in milk dodol, contributes nutrients such as vitamins, minerals, and protein, which helps improve the nutritional content of commercially available dodol. This processing aims to increase milk consumption among the public (Daniatur et al., 2024). Dodol commonly sold on the market has a low nutritional content, such as 19.2% water, 0.2g protein, 6.4g fat, 73.8g carbohydrate, 0.31g ash, and 0.1g insoluble fiber. This is related to the use of raw materials that are less nutritious (Setiavani et al., 2018). An innovation that can provide a solution is the addition of ingredients that can increase the softness, elasticity, and maintain the nutritional value of milk dodol.

Eucheuma spinosum seaweed produces carrageenan, which functions as a chewy texture in various food products, including milk dodol. The type of carrageenan produced is iota carrageenan, which is softer, more elastic, and less hard than kappa carrageenan (Masita and Sukesi, 2015). This advantage makes it useful for giving milk dodol a chewy and soft texture. The ragnan content in Eucheuma spinosum seaweed is relatively high, ranging from 65-67% and has other contents such as 23.35% ash content, 0.13% fat, 6.30% protein, 69.66% carbohydrates, and 19.27% total fiber (Iru and Harimu, 2022). Eucheuma spinosum also has natural antimicrobial properties that function to slow microbial growth, making it a natural preservative for a food product (Sinurat et al., 2019).

RESEARCH METHODS

The research material was dodol made from goat milk, glutinous rice flour, sugar, and salt, with the addition of *Eucheuma spinosum* seaweed at concentrations of 0% (T0), 10% (T1), 20% (T2), and 30% (T3). The method used was a laboratory experiment employing a Completely Randomized Design (CRD) with four treatments and five replications. The obtained data were then analyzed using analysis of variance (ANOVA) using Microsoft excel.

Procedures

1. Making dodol

Goat's milk (500 ml) is divided into two 250 ml portions and pasteurized at 72°C for 15 seconds using the double-wall method. The first portion is used to dissolve sugar (100 g granulated, 75 g brown) and 3.75 g salt while warm. The second portion is mixed with 125 g glutinous rice flour after cooling to avoid clumping. Seaweed is added to both portions at 0%, 10%, 20%, and 30% concentrations. The mixture is cooked over low heat for 40 minutes, then steamed for 15 minutes, cooled for 10 minutes, and frozen for 20 minutes. The dodol is cut into rectangles, baked at 150°C for 5 minutes to reduce moisture, cooled for 10 minutes, then packaged and prepared for testing (Orilda et al., 2022).

2. Protein content

Calculation of protein content is carried out as follows:

$$\% \text{N} = \frac{(\text{ml NaOH sample} - \text{ml NaOH blank}) \text{ N NaOH x } 14{,}008}{\text{sample weight (g) x } 1000} \text{ x } 100\ \%$$

Information :

A = milliliters of NaOH used for the sample (sample titration volume)

B = milliliters of NaOH used for the blank (blank titration volume)

N = normality of NaOH

%N = nitrogen content (%)

The conversion factor of 6.38 is based on the statement of Hetrik et al. (2024), which explains that meat and dairy products use a protein conversion factor of 6.38.

3. Fat content

Calculation of fat content is carried out as follows:

$$\text{Fat content (\%)} = \frac{\text{B} - (\text{C} - \text{A})}{\text{B}}$$

Information :

A = weight of empty filter paper and cotton (g)

B = weight of the sample before extraction (g)

C = weight of filter paper, cotton, and sample after oven-drying (g)

4. Ash content

Calculation of ash content is carried out as follows:

$$\text{ash content (\%)} = \frac{\text{final weight} - \text{weight of crucible}}{\text{weight of sample}}$$

5. Texture

Texture testing is done using a texture analyzer tool. Cubic samples (1 × 1 × 2 cm) were placed under a triangular shear blade, and the instrument was zeroed before testing. The blade cut vertically through the sample, and the shear force value was recorded on the monitor. After testing, the blade and holder were cleaned.

6. pH

The measurement of pH value was carried out using a pH meter. The pH meter was turned on and calibrated using buffer solutions of pH 7 and pH 4. A 5 g milk dodol sample was mixed with 10 ml distilled water and homogenized. The electrode was immersed in the sample, and the stabilized pH value shown on the screen was recorded.

7. Color

Color measurement using the CIE Lab* system was carried out with a spectrophotometer or colorimeter, which captures the spectral reflectance values of the sample surface. The L* value represents lightness on a scale of 0–100, ranging from black to white. The a* value ranges from –100 (green) to +100 (red). The b* notation ranges from –100 (blue) to +100 (yellow), with 0 to +70 specifically indicating the intensity of yellow coloration.

8. Organoleptic

The organoleptic evaluation of milk dodol was carried out using a hedonic test with a Likert scale of 1–5 to determine the panelists' level of preference for the product. The scale consisted of:

1 = Strongly dislike, 2 = Dislike, 3 = Neutral, 4 = Like, 5 = Strongly like. This test involved 30 untrained panelists, so the results reflect general consumer preferences.

RESULTS AND DISCUSSION

Results of analysis of the quality of goat milk dodol with the addition of *Eucheuma spinosum* seaweed can be seen in Table 1.

Table 1. Results of analysis of goat milk dodol with the addition of *Eucheuma spinosum* seaweed

Variabel	Perlakuan			
	T_0	T_1	T_2	T_3
Protein Content (%)	6.37 ± 0.16^{y}	5.93 ± 0.26^{xy}	5.66 ± 0.31^{wx}	5.33 ± 0.25^{w}
Fat Content (%)	13.19 ± 1.77	13.14 ± 1.31	12.94 ± 1.66	11.96 ± 1.20
Ash Content (%)	1.49 ± 0.15^{w}	2.80 ± 0.20^{x}	3.37 ± 0.28^{y}	3.96 ± 0.29^{z}
Texture (N)	26.44 ± 2.30^{x}	21.13 ± 1.63^{w}	17.95 ± 1.42^{w}	16.22 ± 4.37^{w}
pH	6.80±0.38	6.76±0.15	6.88±0.16	6.94±0.05
Color				
L*	39.65 ± 2.69^{w}	42.25 ± 2.66^{wx}	45.39 ± 1.32^{x}	42.81 ± 1.12^{wx}
a*	8.33 ± 1.15^{b}	6.75 ± 1.97^{ab}	5.16 ± 0.44^{a}	6.17 ± 1.27^{a}
b*	21.16 ± 2.05	22.29 ± 1.27	22.71 ± 1.04	22.57 ± 1.36
Organoleptic				
Texture	2.50 ± 0.74^{w}	3.48 ± 0.87^{x}	3.43 ± 0.93^{x}	3.40 ± 0.97^{x}
Color	2.08 ± 1.08^{w}	2.91 ± 1.35^{w}	3.79 ± 0.91^{x}	3.07 ± 0.96^{x}
Aroma	3.83±0.95	3.78±1.12	3.74±1.04	3.69±0.94
Taste	3.02±0.95	3.36±0.92	3.23±0.97	3.47±0.90

Note: Different $^{a-b}$ superscripts in the same row have a significant effect (P<0.05).
Different $^{w-z}$ superscripts in the same row have a highly significant effect (P<0.01).

1. Protein content

The average protein content produced in T0 (control) was 6.37%, which is also the highest protein content of the milk dodol produced. Treatment T1 had a protein content of 5.93%, T2 was 5.66%, while T3 was 5.33%, which is the lowest average of all treatments. This protein value is relatively high compared to dodol commonly found on the market with lower protein content. Dodol commonly sold on the market only contains 0.2 g of protein (Tawas et al., 2024). The results of this protein content analysis are in accordance with the research of Desrizal et al. (2022) dodol with the addition of seaweed obtained protein content values ranging from 4.68% to 6.72%, where the increase in seaweed concentration is inversely proportional to the resulting protein content. Another factor suspected of causing the decrease in the protein content of milk dodol is the salt content in seaweed which can cause protein denaturation. Pamungkas et al. (2023) found that the presence of salt in seaweed can alter protein structure (denaturation), resulting in lower protein levels. Protein content decreased with increasing seaweed concentration, but it met the minimum protein content requirements for dodol (a type of dodol) as stipulated in SNI 01-2986-1992, which is 3% (Sari et al., 2020).

2. Fat content

The average fat content of milk dodol with added seaweed ranged from 11.20–13.19%, with the highest average at P0 at 13.19% (control or without seaweed addition) and the lowest at T3 at 11.20% (30% seaweed addition). This finding indicates a tendency for fat content to decrease with increasing seaweed concentration. The contributing factor is the low fat content of seaweed, with *Eucheuma spinosum* containing only 0.12–0.13% fat (Iru and Harimu, 2022). Carrageenan produced by seaweed is more hydrophilic, meaning it can bind water rather than fat (Rifani et al., 2016). Water content is inversely proportional to fat content. This statement indicates that an increase in water content is inversely proportional to the resulting fat content. During the long cooking process of dodol at high temperatures, the fat in goat's milk (especially long-chain saturated and unsaturated fats) can undergo oxidation, especially if exposed to air and not properly protected. The oxidation process can occur due to oxygen exposure to fatty dough during cooking (Yulia et al., 2017). The findings of this study indicate that increasing the amount of seaweed added is directly proportional to the decrease in the fat content of milk dodol. This decrease in fat content can add value to the final milk dodol product with the addition of seaweed, because milk dodol is a low-fat product and is generally preferred by consumers who are concerned about their saturated fat intake. The average fat content of milk dodol still meets the SNI requirements, which is a minimum of 7% (Lukito et al., 2017).

3. Ash content

The average ash content was 1.49% in the treatment without seaweed addition (T0), increasing to 3.96% in the treatment with 30% seaweed addition (T3). This is suspected to be due to the increase in mineral content as the seaweed concentration in goat milk dodol increases, resulting in a higher ash content. The addition of seaweed can increase the ash content of dodol because carrageenan contains around 14.21% ash (Irmadiati et al., 2021). *Eucheuma spinosum* contains various macro minerals such as sodium (Na), potassium (K), calcium (Ca), magnesium (Mg), chlorine (Cl), and phosphorus (P), as well as micro minerals such as zinc (Zn), copper (Cu), iron (Fe), and cadmium (Cd) (Febriani, 2023). These mineral contents contribute to the ash content of products using seaweed (Pangestuti and Darmawan, 2021). The addition of seaweed and tomatoes to dodol by Lukito et al. (2017) resulted in an increase in the ash content of the product.

4. Texture

The average texture value obtained was 26.44 N in the treatment without the addition of seaweed (T0), which decreased with increasing seaweed concentration, to 16.22 N in the treatment with 30% seaweed addition (T3). This is thought to be due to the carrageenan content in seaweed which is able to absorb water to form a gel. Iota carrageenan is a complex polysaccharide that is soluble in water at high temperatures and begins to form a gel when the temperature drops to around 50 °C (Akbari et al., 2020). The gel is formed when random molecules change into helices when the temperature drops, then the helices bind to form a stable three-dimensional network with the help of potassium and calcium ions (Akbari et al., 2020). The gel formed can make the product softer due to the high water content. This statement is supported by Lukito et al. (2017) who stated that the texture of dodol will be softer if the water content is high. The statement of Ariyana et al. (2017) corroborated this description, stating that the addition of iota carrageenan to bread increases the water content, resulting in a moister and softer crumb, with a texture that is easier to chew and swallow. A higher texture test result indicates a harder texture, while a lower value indicates a softer texture (Astuti et al., 2019). The addition of *Eucheuma spinosum* can improve the elasticity, softness, and tenderness of squid otak-otak (Triyastuti et al., 2024).

5. pH

The average pH value was 6.76 in the 10% seaweed addition treatment (T1), increasing to 6.94 in the 30% seaweed addition treatment (T3). This is thought to be because *Eucheuma spinosum* seaweed has a pH that tends to be neutral. Seaweed has a standard pH value of around 7-8.5 (Wangge et al., 2022). *Eucheuma spinosum* has alkaline or basic properties so it can neutralize acidity (Prihastuti and Abdassah, 2019). This is reasonable if the addition of *Eucheuma spinosum* does not cause a significant change in the pH of goat milk dodol. The best pH value for milk dodol in the study by Prastyawan et al. (2015) was 6.76, the value closest to neutral pH. The addition of *Eucheuma spinosum* seaweed increased the pH of yogurt (Wahyu, 2020). Based on the results of the texture and pH analysis, these two parameters are interrelated in determining the texture quality of goat milk dodol. The addition of *Eucheuma spinosum* seaweed increased the pH of dodol but decreased its texture. This contrasts with research by Nugroho et al. (2018), which found that low pH resulted in a soft and crumbly texture, while high pH resulted in a more elastic curd and a denser, chewier texture. This difference is thought to be due to the increased carrageenan content, which softens the dodol, and the increased minerals, which raise the pH of milk dodol.

6. Color

The results of the L*a*b* color test are shown in Table 1. The L* value in the L*a*b* color test system represents the brightness level, ranging from 0 to 100, with a higher L* value indicating a brighter product color. Based on the L* color test data for milk dodol, an increase in the L* value is observed. This is thought to occur because *Eucheuma spinosum* has a bright color and produces iota carrageenan, which forms a clear gel (Murdiningsih and Barlian, 2017). The higher the concentration of seaweed added, the brighter the color of the milk dodol. The increase in brightness occurs in line with the increase in seaweed concentration. This factor is influenced by the bright color of seaweed, which adds brightness to the milk dodol mixture. This finding is supported by Komarudin and Arif (2021), who stated that seaweed has a bright and clear appearance, so adding more of it can increase the product's brightness.

The a* value represents the level of redness, with a range of values between -100 and +100, with positive values tending to be reddish and negative values tending to be greenish. Based on the research data, the average a* value obtained was positive, indicating that the milk dodol was reddish in color. The average a* value tended to decrease, and a decrease in the a* value is thought to cause the dodol color to shift from reddish brown to a dull or neutral brown, thus reducing the reddish color in the milk dodol. This may be influenced by the protein content, which decreases with increasing seaweed concentration, thus decreasing the Maillard reaction. The brown color in dodol is produced by a non-enzymatic browning reaction involving the Maillard reaction and caramelization (Saroinsong et al., 2015). The b* parameter represents the intensity of the yellow color, with a scale between -100 and +100. Negative means the color tends to be bluish, and positive means the color tends to be yellowish. Based on the analysis, there was no significant effect of the addition of *Eucheuma spinosum* on the b* value, which is thought to be caused by the red phycoerythrin pigment, so it does not contribute to the yellowish color (Lumbessy et al., 2020). The increase in the b* value in milk dodol with the addition of seaweed is thought to be related to the caramelization process that occurs during heating. The addition of seaweed does not directly provide a yellow color, but can create dough conditions that support optimal caramelization, resulting in a yellowish color that causes the b* value of milk dodol to tend to increase.

7. Organoleptic

Organoleptic testing assesses quality, detects deviations through tasting, and observes changes in the product (Pratiwi and Batubara, 2020). Aspects assessed include texture, color, aroma, and taste (Ismanto, 2022). The scores obtained reflect the panelists' level of preference, with higher scores indicating greater preference for the product, while lower scores indicate less preference (Hanggara et al., 2016). The average scores in Table 1 indicate that panelists' acceptance of goat's milk dodol with the addition of up to 30% *Eucheuma spinosum* seaweed was at a neutral level. This is consistent with Prastyawan et al. (2015), who stated that the addition of seaweed flour produces a milk dodol texture acceptable to panelists.

a. Texture

The average organoleptic texture scores indicate a neutral category, with scores ranging from 2.50 for the treatment without seaweed (T0) to 3.48 for the treatment with 10% seaweed (T1). These results indicate that the texture of goat's milk dodol was generally accepted by the panelists. The smooth and moist texture of the dodol provided an easy-to-bite elasticity, making it a favorite among panelists. The organoleptic texture score in Table 1 decreased, presumably due to the addition of *Eucheuma spinosum*, which increased the softness of the milk dodol due to its greater water absorption capacity with increasing seaweed percentage. This explanation is supported by Wahyu (2020)'s statement that the carrageenan content in seaweed functions to bind and retain water, thus improving the dodol's texture. Prihastuti and Abdassah (2019) further stated that *Eucheuma spinosum* contains the iota type of carrageenan, which is known to have elastic properties and can prevent syneresis in the product. A study on squid otak-otak (squid brain) with the addition of *Eucheuma spinosum* resulted in a chewy, soft, and tender texture (Triyastuti et al., 2024).

b. Color

Based on Table 1, the average organoleptic color score was 2.10 in the treatment without seaweed (T0), increasing to 3.79 in the treatment with 20% seaweed (T2). These results indicate that the organoleptic color of goat's milk dodol was generally acceptable to panelists. This is likely due to the use of pale-colored seaweed (without color), resulting in a more muted color. This statement is supported by Sanprasert et al. (2025) who stated that carrageenan in seaweed forms a gel network through the assembly of semi-flexible filaments within the network, significantly affecting water distribution and gel stiffness during heating. This network can cause inhomogeneity in water distribution and temperature, potentially affecting chemical reactions such as Maillard and uneven caramelization, resulting in different color changes in products such as dodol with seaweed compared to those without carrageenan. Ariyana et al. (2017) stated that the color change resulting from the addition of iota carrageenan actually adds value to bread. The addition of seaweed increased panelists' ratings to a "like" rating (Karina and Desrizal, 2021). Adding ingredients such as seaweed can produce color changes depending on their pigment content (Pasaribu et al., 2015).

c. Aroma

The average organoleptic aroma score in Table 1 indicates a neutral rating, with a score of 3.83 in the treatment without seaweed (T0), decreasing to 3.69 in the treatment with 30% seaweed (T3). These results indicate that the organoleptic aroma of goat's milk dodol was generally accepted by panelists. The T0 treatment, without seaweed, produced the most prominent goat's milk aroma, representing the original aroma of the dodol in this study. This aligns with Kalsum (2023) statement that milk dodol has a distinctive milky aroma and a sweet taste. An appropriate aroma will increase product acceptance by panelists (Arziyah et al., 2022).

The decrease in aroma scores in Table 1 is likely due to the increased seaweed concentration in the formulation, which reduces the influence of milk on the aroma of goat's milk dodol. Higher seaweed concentrations can mask the aroma of the main ingredients (Mondong and Sulistijowati, 2023). The milk content in each treatment is the largest component in the total formulation. The aroma of dodol originates from the ingredients used in the processing (Aliyah and Suryatna, 2019). Panelists preferred the aroma of dodol with lower seaweed concentrations, as indicated by the decreasing scores in Table 1 with increasing seaweed concentration. Excessively high seaweed concentrations can lower aroma scores due to the emergence of other, pungent or unfamiliar aromas (Pasaribu et al., 2015). Increasing the proportion of seaweed flour decreases panelists' preference for the aroma of dodol (Lukito et al., 2017).

d. Taste

The average organoleptic taste score in Table 1 indicates a neutral rating, with a score of 3.02 in the treatment without seaweed (T0) increasing to 3.47 in the treatment with 30% seaweed (T3). These results indicate that the organoleptic taste of goat milk dodol was generally accepted by panelists. This is likely because the addition of seaweed enhances the flavor, increasing panelist acceptance, although not significantly (P>0.05). This statement aligns with Syahlan et al. (2023) who stated that the addition of seaweed enriches the flavor complexity, providing a distinctive characteristic that distinguishes this dodol. The taste of milk dodol, as reported by Prastyawan et al. (2015), was neutrally accepted by panelists; the combination of sweet and salty flavors created a savory flavor that was preferred. Rismandari et al.'s (2017) statement complements the previous description, stating that seaweed contains minerals such as potassium (K), sodium (Na), and magnesium (Mg), which contribute to the natural savory flavor. The results in Table 1 align with Karina and Desrizal (2021) who found that adding up to 30% seaweed resulted in increased flavor scores. The flavor score of milk dodol increased with increasing seaweed porridge concentration (Safitri et al., 2018).

CONCLUSION

The addition of *Eucheuma spinosum* seaweed to goat milk dodol resulted in an increase in ash content, L* and b* colors, texture and color organoleptic values, but decreased the protein, fat, texture, pH, a* color, aroma and taste organoleptic values. Based on the data presented, the best treatment was the addition of Eucheuma spinosum seaweed at 30% (T3). It is recommended to conduct further research on expanded sensory storage and evaluation.

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