

ORGANOLEPTIC ANALYSIS AND CONSUMER PREFERENCES TOWARD VARIOUS COMMERCIAL NORI BRANDS IN THE LOCAL MARKET OF GORONTALO

Analisis Organoleptik dan Preferensi Konsumen Terhadap Berbagai Merek Nori Komersial
di Pasaran Lokal Gorontalo

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(Received March 8th 2026; Accepted May 5th 2026)

ABSTRACT

This study aimed to evaluate the sensory quality, consumer acceptance, and nutritional composition of several commercial nori products available on the market. Three commercial nori samples coded as A, B, and C were tested using an organoleptic method by assessing color, aroma, taste, and texture attributes. In addition, the nutritional composition was analyzed based on the nutrition facts listed on the product packaging, including energy, fat, carbohydrates, protein, fiber, and sodium. The results of the organoleptic test showed that product B obtained the highest average score of 4.56, followed by product A with 3.84 and product C with 3.54. Sensory evaluation indicated that product B had a dark glossy color, distinctive roasted aroma, sweet savory taste, and stable crispy texture, making it the most preferred by panelists. Nutritional composition analysis showed that products B and C had the highest energy content of 25 kcal per serving, while product A had a lower energy content of 15 kcal. Product C contained the highest fat content (2.5 g), whereas product A had the highest carbohydrate and protein contents. Differences in sensory characteristics and nutritional composition among the products influenced consumer acceptance of commercial nori products.

Keywords: Commercial Nori, Organoleptic Test, Sensory Quality, Nutritional Composition, Consumer Acceptance.

ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi kualitas sensorik, penerimaan konsumen, serta komposisi gizi beberapa produk nori komersial yang beredar di pasaran. Tiga sampel nori komersial yang diberi kode A, B, dan C diuji menggunakan metode organoleptik dengan menilai atribut warna, aroma, rasa, dan tekstur. Selain itu, dilakukan analisis komposisi gizi

berdasarkan informasi nilai gizi pada kemasan produk yang meliputi energi, lemak, karbohidrat, protein, serat, dan natrium. Hasil uji organoleptik menunjukkan bahwa produk B memperoleh nilai tertinggi dengan skor rata-rata 4.56, diikuti oleh produk A sebesar 3.84 dan produk C sebesar 3.54. Secara sensorik, produk B memiliki karakteristik warna gelap mengkilap, aroma panggang khas, rasa gurih manis, serta tekstur renyah stabil yang paling disukai panelis. Analisis komposisi gizi menunjukkan bahwa produk B dan C memiliki energi tertinggi sebesar 25 kkal per porsi, sedangkan produk A memiliki energi lebih rendah yaitu 15 kkal. Produk C memiliki kandungan lemak tertinggi sebesar 2.5 g, sementara produk A memiliki kandungan protein dan karbohidrat tertinggi. Perbedaan karakteristik sensorik dan komposisi gizi antar produk memengaruhi tingkat penerimaan konsumen terhadap produk nori komersial.

Kata Kunci: Nori Komersial, Uji Organoleptik, Kualitas Sensorik, Komposisi Gizi, Penerimaan Konsumen.

INTRODUCTION

Nori is a thin sheet made from the red algae *Pyropia* (formerly *Porphyra*) formed into sheets of about 0.2 mm, composed of 10 to 20 layers, and cut into uniform sizes (kizaminori/aonori) for various products. The process includes drying into dried nori or enriched with seasoning, toasting (seasoned/toasted nori; ajitsuke nori, okazunori, mominori). The porphyran pigment value in fresh/dried nori contributes to its shiny black color of about 40% of the mass of dried nori (hoshi nori) (Kawashima *et al.*, 2018), with porphyran being the main component of the cell wall of the red algae *Pyropia yezoensis* in dried nori (Geng *et al.*, 2019); (Yokoyama *et al.*, 2025). In cultural context, nori has been recorded in the history of the East Asian region; In China, it is said to have been used as food and medicine since the Chi Han dynasty around 300 BC (Kawashima *et al.*, 2018); (Cho *et al.*, 2021).

Nori has significant nutritional value. It is rich in protein, fiber, and various minerals such as iodine, calcium, and iron, making it beneficial for health (Tutuhatunewa, 2021); (Safa'at & Hasanah, 2023). Over time, nori has become more popular than just a Japanese food, gaining popularity in international cuisine, serving as a sushi filling, garnish, and healthy snack in various parts of the world (Utami *et al.*, 2022; Sihono *et al.*, 2023).

Nori, commonly known as a seaweed product frequently used in culinary arts, is a potent source of nutrients and has garnered increasing attention in the global market. Given market developments, it is crucial to evaluate the organoleptic quality of commercial nori, which is closely linked to consumer preferences (Marpaung & Mekaniwati, 2020; Tutuhatunewa, 2021). As a direct-to-consumption product, nori's organoleptic quality is a key factor in determining consumer preference and satisfaction. Parameters such as color, aroma, taste, and texture significantly influence consumer perceptions of product quality. Therefore, sensory evaluation is an important approach to assessing the quality and acceptability of commercial nori in the market.

Previous research has shown that factors such as product diversity, quality, price, and marketing significantly influence consumer satisfaction. Awareness of The diversity of nori products, including variations in production methods such as the use of local seaweed blends, is crucial for achieving maximum consumer satisfaction (Fransiska *et al.*, 2022). Therefore, the organoleptic aspects of nori products significantly impact consumer purchasing decisions. According to (Tutuhatunewa, 2021); (Valentine *et al.*, 2020), color, aroma, and flavor directly contribute to consumer acceptance.

Although many nori products are available on the Indonesian market, research comparing the sensory quality of commercial brands is still limited. This study aims to conduct organoleptic tests on several commercial nori products to evaluate their sensory quality and

consumer acceptance in the market, particularly in Gorontalo. The results are expected to provide input for producers in improving product quality and serve as a reference for consumers in selecting nori products that suit their preferences. Furthermore, with a better understanding of consumer preferences in the market, nori producers can improve their marketing strategies, including branding and product promotion, by focusing on developing products that meet consumer expectations.

RESEARCH METHODS

The tools used in this study included a questionnaire or organoleptic assessment sheet to record the panelists' assessment results on sensory attributes, stationery, and a computer equipped with data processing software such as Microsoft Excel or SPSS for data analysis. In addition, serving containers or plates were used to present samples to the panelists, along with sample code labels to maintain objectivity. The materials used in this study were three types of commercial nori products on the market, labeled A, B, and C (Figure 1). These products served as the primary samples in the organoleptic test to assess color, aroma, taste, and texture. Furthermore, nutritional composition information was obtained from the nutritional value labels listed on the packaging of each product. Images of commercial nori product samples can be seen in Figure 1.

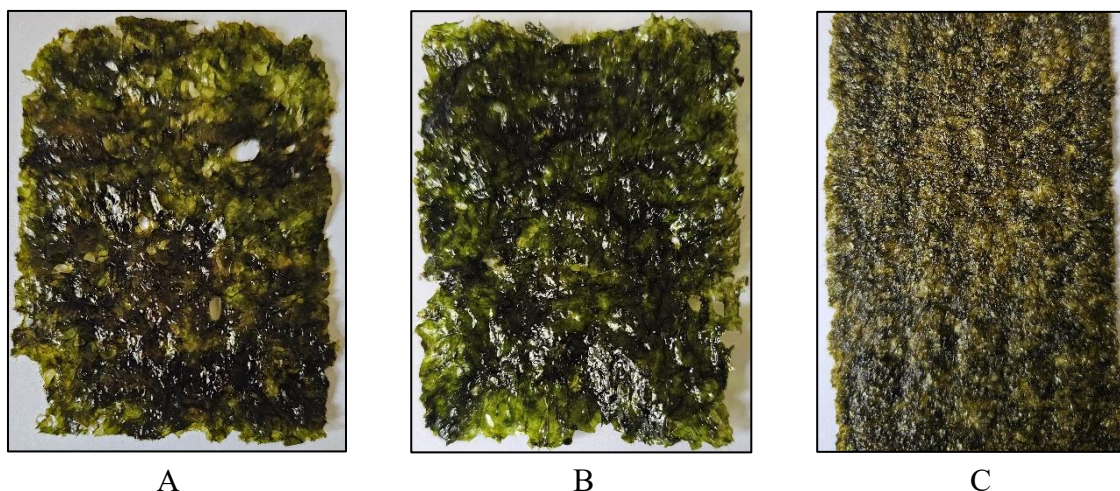


Figure 1. Commercial nori product research sample

The study was conducted in August 2024. Sample testing was conducted at the Fisheries Product Technology Laboratory, Gorontalo State University. This descriptive quantitative study aimed to evaluate the sensory quality and consumer acceptance of several commercial nori brands through organoleptic testing. Twenty-five untrained panelists participated in the organoleptic testing. The panelists consisted of students and university staff with basic experience consuming nori products.

The samples used consisted of three commercial nori brands sold freely in markets and supermarkets. Brands were selected purposively based on their availability and popularity in the local market, particularly in Gorontalo City. Sample preparation involved taking nori sheets, cutting them into uniform sizes (3x3 cm), and presenting them in sealed containers with codes to avoid brand identity bias.

Organoleptic testing was conducted by asking panelists to evaluate five sensory attributes: color, aroma, taste, texture, and overall, using a 5-point hedonic scale, with scores as shown in Table 1.

Table 1. Scales hedonic and numerical scales

| Scales hedonic | Scales numerical |
|----------------|------------------|
|----------------|------------------|

| | |
|----------------|---|
| Really like | 5 |
| Like | 4 |
| Neutral | 3 |
| Do not like | 2 |
| Really dislike | 1 |

The panelists' assessment data were analyzed descriptively (mean and standard deviation). To determine any significant differences between brands, a one-way ANOVA statistical test was performed with a 5% significance level ($\alpha = 0.05$). If significant differences were found, Duncan's test was performed. The software used for data analysis was SPSS.

RESULT

Organoleptic Testing

Organoleptic testing was conducted on three commercial nori brands (referred to as Brands A, B, and C), assessing attributes including color, aroma, taste, and texture. Twenty-five untrained panelists provided assessments using a 5-point hedonic scale. A histogram of the organoleptic test results for the commercial nori products is shown in Figure 2.

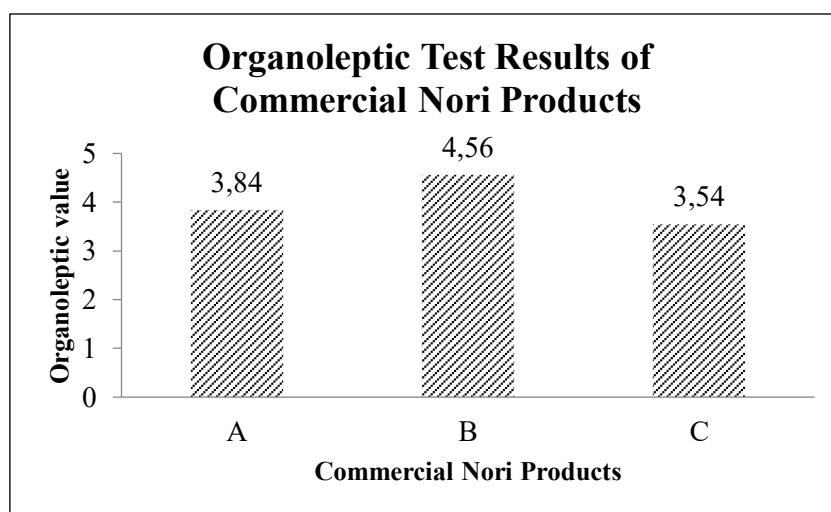


Figure 2. Organoleptic test results of commercial nori products

Data analysis using a one-way ANOVA test showed no significant differences ($p > 0.05$) in all tested attributes, including color, aroma, taste, and texture, between products A, B, and C. The three commercial nori brands tested were deemed to have relatively comparable sensory qualities and were acceptable to consumers in the panel of panelists used in this study. A table of the typical sensory characteristics of each brand can be seen in Table 2.

Table 2. Sensory characteristics of each commercial nori product

| Attribute | A | B | C |
|-----------|-------------------|------------------|-----------------------|
| Color | Dull dark green | Dark and shiny | Dark green shiny |
| Aroma | Light, neutral | Special roast | Strong, oily, spicy |
| Flavor | Light savory | Sweet and savory | Intense, spicy savory |
| Texture | Not crispy enough | Stable crispy | The crispiest |

Chemical Testing

Nutritional composition analysis was conducted on three commercial nori products, A, B, and C, based on the nutritional information listed on the packaging. The parameters observed included energy (kcal), fat (g), carbohydrate (g), protein (g), fiber (g), and sodium (mg). The results of the nutritional content analysis per serving are presented in Table 3.

Table 3. Nutritional Composition of Commercial Nori Products per Serving

| Composition | Sampel | | |
|------------------|--------|----|-----|
| | A | B | C |
| Energy (kcal) | 15 | 25 | 25 |
| Fat (g) | 0 | 2 | 2.5 |
| Carbohydrate (g) | 2 | 1 | 1 |
| Protein (g) | 2 | 1 | 1 |
| Fiber (g) | 1 | 1 | 0 |
| Sodium (g) | 40 | 90 | 25 |

DISCUSSION

Organoleptic Testing

Based on organoleptic testing of nori products, the absence of significant differences between commercial nori brands indicates that commercial nori producers have met sensory quality standards in terms of color, aroma, taste, and texture. This uniformity may reflect standardization in raw materials and production processes, as well as the ability of each brand to tailor products to general consumer tastes. According to Nazwa & Rahayu (2020); Setyobudi *et al.* (2022), individual preferences vary depending on their personal preferences.

Although there were no statistically significant differences, the assessment results still indicated the panelists' relative preferences for certain products. Brand B had the highest average score, which can be a consideration for producers in increasing competitiveness. According to (Hidayu *et al.*, 2025), parameters assessed through organoleptic testing produce certain average values that can be interpreted to support production decisions. By identifying average values for sensory aspects, producers can make improvements and enhancements to nori products to meet consumer expectations. According to (Hasimun *et al.*, 2022), modifications in raw materials can affect sensory properties, which will ultimately affect consumer acceptance.

Chemical Testing

Berdasarkan Tabel 3, terlihat bahwa masing-masing produk memiliki karakteristik gizi yang The differences are primarily related to their fat, protein, and sodium content. Products C and B have the same energy content, 25 kcal per serving, while Product A has a lower energy content, 15 kcal per serving. This difference is influenced by the fat content of each product.

Product C has the highest fat content (2.5 g), followed by Product B (2.0 g). The higher fat content is generally associated with the use of oil in the baking process, which can enhance the savory flavor and crispiness of the product. These results align with sensory assessments, where products with higher fat content tend to score better in taste and texture. According to (Takahashi *et al.*, 2000); (Hirano *et al.*, 2005); (Cavalcanti *et al.*, 2014), the perception of "chewy/crispness" is influenced by emulsification and porphyrin stabilization.

The carbohydrate content of all three products is relatively low, ranging from 1–2 g per serving, allowing nori products to be categorized as low-carb snacks. Product A has the highest carbohydrate content (2 g), followed by products C and B (1 g). According to Daugherty & Watkins (1976); Torabian *et al.* (2026), the low-carbohydrate structure is consistent with nori's

profile as a relatively low-energy source compared to starch-based snacks that are higher in carbohydrates.

In terms of protein, product A has the highest value, at 2 g per serving, while products C and B each have only 1 g. The higher protein content has the potential to enhance the nutritional value of the product, especially as a source of plant-based protein. According to (Daugherty & Watkins, 1976); Torabian *et al.*, 2026), a higher protein content has the potential to enhance nutritional value because plant-based protein is a nutrient source, in accordance with general principles for evaluating snack food nutrition.

Fiber content was only found in products A and B (1 g). Fiber in plant foods plays a role in digestive health and may enhance the perception of "healthy food" among consumers, although the specific sensory impact of fiber in nori can vary depending on the concentration and type of fiber (Zharova *et al.*, 2020). (Saroch *et al.*, 2024); (Torabian *et al.*, 2026).

Sodium is an important component in nori products due to the use of salt and seasonings in the production process. Analysis results showed that product B had the highest sodium content (90 mg), followed by product A (40 mg), and product C (25 mg). High sodium content can increase the risk of hypertension if consumed excessively. Therefore, products with lower sodium content, such as product C, are more recommended for consumers who are watching their salt intake. However, higher sodium content can also increase the intensity of savory flavors, which contributes to sensory acceptance. According to (Sadek *et al.*, 2018); (Vellinga *et al.*, 2024), sodium can increase the intensity of savory flavors.

The Relationship between Nutritional Composition and Sensory Acceptance

Organoleptic test results indicate that taste and texture are the primary factors influencing consumer acceptance. Product C, with its higher fat content, tended to achieve better sensory scores, particularly for crispiness and savory flavors.

Conversely, Product A, which is lower in fat and calories, tended to have a less crispy texture, despite its higher protein content. Product B fell in the middle, with a balance between fat, fiber, and sodium content. The results of this study indicate that nutritional composition, particularly fat and sodium content, plays a significant role in shaping the sensory characteristics of nori products. According to (Takahashi *et al.*, 2000); (Hirano *et al.*, 2005); (Cavalcanti *et al.*, 2014), nori and porphyran-based products exhibit stable textures and emulsions, contributing to positive sensory perceptions related to taste and texture.

Differences in nutritional content between brands suggest that manufacturers employ different formulation strategies. Products with high fat content emphasize flavor, while low-fat products are more focused on healthy eating.

Therefore, future development of nori products can be directed at formulations that balance sensory quality and nutritional value, such as by reducing sodium content without reducing the taste.

CONCLUSION

Based on the results of the study on the evaluation of the sensory quality and nutritional composition of commercial nori products, it can be concluded that product B has the highest level of consumer acceptance with an organoleptic value of 4.56, followed by product A with 3.84, and product C with 3.54. The differences in organoleptic values are influenced by the sensory characteristics of each product, especially in the attributes of taste and texture. Product B has the characteristics of a dark, shiny color, a distinctive roasted aroma, a savory sweet taste, and a stable crunchy texture so that it is preferred by panelists. Product C has the crispiest texture with an intense savory taste, while product A has a mild aroma with a relatively less crunchy texture. In terms of nutritional composition, products B and C have the highest energy content of 25 kcal, while product A has the lowest energy at 15 kcal. Product C has the highest

fat content, while product A has the highest protein and carbohydrate content. The highest sodium content is found in product B. Overall, commercial nori products have different sensory characteristics and nutritional composition, which can influence consumer preference for these products.

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