

**Review article NORI SEAWEED Products from *Kappaphycus alvarezii*.**

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**Abstract**

The type of red seaweed that can be made for nori is *Kappaphycus alvarezii*. This article aims to review the manufacture of nori from *kappaphycus alvarezii* sea runput and nori quality. Based on the literature study obtained information that the manufacture of nori from *Kappaphycus alvarezii* seaweed consists of 7 stages, namely seaweed cleaning, seaweed soaking, washing, smoothing, seaweed porridge cooking and mixing with other additives, printing and drying. The quality of nori is based on its physical properties, namely tensile strength, organoleptic properties such as color and texture, its chemical properties are water content.

**Keywords:** quality, texture, color, tensile strength, moisture content.

**INTRODUCTION**

The use of seaweed is very broad as an additional material for the pharmaceutical industry, cosmetics, textiles, paper, paint and is used in the processing process of various foods and snacks. One of the uses of seaweed in the field of food processing is

nori. Nori is a sheet of dried or baked seaweed (Korringa, 1976), while according to Giury (2006) nori is one of the processed products of dried natural seaweed and is a processed product of red seaweed (*Rhodophyta*). The type of red seaweed that can be made for nori is *Kappaphycus alvarezii*. This article

aims to review the manufacture of nori from the sea runput *Kappaphycus alvarezii*.

### ***Kappaphycus alvarezii***

In Indonesia, seaweed is known for its two main groups (genera) cultivated, namely *Gracilaria* in ponds and *Eucheuma* in coastal waters. Seaweed, *E. cottonii* which has been better known by seaweed cultivators is a synonym of the name *Kappaphycus alvarezii*. The name *Kappaphycus alvarezii* has taxonomically replaced it on the basis of the type of gelatinous content produced, namely kappa karaginan.

Taxonomy of *kappaphycus alvarezii* seaweed according to Parenrengi and Sulaeman (2007) can be classified as follows:

Phylum : Rhodophyta  
Grade : Rhodophyceae  
SubClass : Florideophycidae  
Order : Gigartinales  
Family : Soliericeae  
Genus : *Kappaphycus*  
Species : *Kappaphycus alvarezii*



Gambar 1 . *Kappaphycus alvarezii* seaweed green (A) and brown (B) varieties (Source: Parenrengi and Sulaeman 2007)

Morphological features of *Kappaphycus alvarezii* according to Atmadja (1996) in Zahroh (2013), are having a cylindrical thallus shape, slippery surface, green, yellow, gray or red color. The appearance of thallus varies from simple to complex forms. Branching in various directions with the main branches coming out close to each other to the basal area (base). The first and second branches grow by forming lush clumps with special features leading to the arrival of sunlight. Morphology of *K. alvarezii* is thallus perpendicular, cylindrical with two sides that are not the same width, there are protrusions (nodule) and spines (spine), thallus cylindrical or flattened, irregular branches (Prihaningrum, et al., 2001).

*K.alvarezii* grows on the flattening of shallow coral reefs to a depth of 6 meters, attached to corals, shells and other hard objects. Factors that are very influential on the growth of this type are enough current and salinity (salt content) is stable, which ranges from 28-34 per mile. Therefore, this type of *K. alvarezii* will live well when away from the mouth of the river. This type has been cultivated by being tied to a rope so that it does not need to be attached to a coral substrate or other objects (Daniel, 2012). In Indonesia, the cultivation location of this type of marine algae has been developed in various regions such as Java, Bali, West Nusa Tenggara, Sulawesi and Maluku (Atmadja and Sulistidjo, 1996 in Duma, 2012).

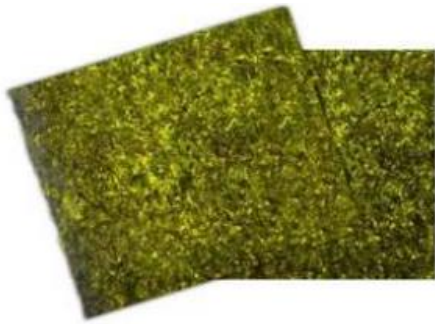
### **Nori**

Nori is a spiced seaweed sheet that is dried or baked (Korringa, 1976). Nori's other defini is the thin sheets consumed after being dried and baked (Levine and Sahoo, 2010). While according to Kuda, et al (2004) nori is a food from seaweed that is consumed

after being dried and baked. Another name of nori is hattai (China) or kim or gim (Korea). Commercial nori circulating in the market generally comes from *porphyra* sp seaweed (Riyanto et al. 2014) which live in subtropical areas. Nori of the *Porphyra* type is blackish-green with a moisture content of 16.09%, ash content of 5.12%, fat content of 0.10%, protein content of 6.15% and carbohydrates of 72.54% (Lalopua et al. 2018). One sheet of dried nori weighs 2.5g to 3g (Korringa, 1976) or 3.5g to 4g (FAO, 2008).

Generally nori in the market there are two types, namely nori as a snack (snack) and nori as a coating (coating) or commonly used as a sushi wrapper. In addition, nori can also be used as a decoration and flavoring or flavoring in a variety of Japanese cuisines (Yamamoto, 1990). Snack nori is almost the same as nori coating, but snack nori has a delicious taste and addictive nature (Hoff, 2015). Generally nori coatings have a rather unsalted taste used to roll sushi and makisushi temaki (Teddy, 2009). In the

research that will be done, namely the manufacture of nori products as coatings or sushi wrappers. The raw materials used in the process of making nori will affect the physical and chemical characteristics of the nori produced and affect the quality of nori (Ihsan, 2016).



Gambar 2. <https://my-best.id/87873>

Nori texture as a coating or sushi wrapper is dominant in a slightly crisp texture and is not easily broken if the nori is still in good quality (Ramadan, 2019). Dry sheet-shaped nori has a fairly short shelf life (Nurfiani et al. 2017). This product has characteristics quite susceptible to damage caused by the transfer of oxygen and also water vapor, therefore packaging materials are needed that have good protection against oxygen and water vapor transfer (Lalopua et al.

2018). Generally nori is packaged in plastic bag packaging, plastic bottles or airtight cans due to the nature of nori that easily loses its crispy taste and easily becomes moist (Teddy, 2009). As for generally packaging that is often used for dry-shaped nori and sheets, namely Polypropylene plastic packaging (PP), High Density Polyethylene (HDPE) and aluminum foil which has good water and gas molecular migration barrier properties (Hendrasty, 2013).

### Stages of Making Nori

Here are the stages of processing seaweed nori according to Tianasari *et al* (2018) as follows:

1. **Seaweed Cleaning.**

Dried *Kappaphycus alvarezii* seaweed is cleaned of dirt that sticks by washing using ordinary water. This cleaning process aims to clean the seaweed from the remaining sand and dirt that is still attached.

2. **Seaweed**

**Soaking.** *Kappaphycus*

*alvarezii* dry seaweed that has been clean soaked in a mixture of water and acetic acid with a ratio of dried seaweed (grams): water (mL): acetic acid (mL) = 2:60:1. Acetic acid used is a concentration of 4%. The function of this soaking is to soften the seaweed tissue. Soaking is carried out for 24 hours.

3. **Laundering.** After the soaking process, seaweed is washed back with water until clean or until the water is clear laundry.
4. **Smoothing.** Washing seaweed is added water by comparison between dried seaweed (grams) with mineral water (mL) = 1: 8 then mashed using a blender for 1.5 minutes. This process aims to facilitate the process of ripening and printing.
5. **Cooking.** Seaweed porridge resulting from the smoothing process is cooked for approximately 30 minutes. During the ripening process, seaweed porridge is added

seasoning consisting of salt, sugar, pepper, flavoring, olive oil, sesame oil and fish soy sauce, stirred until homogeneous.

6. **Printing.** The seaweed porridge from cooking is then placed on a 26 x 14 cm baking sheet that has been smeared with coconut oil evenly.
7. **Drying.** Drying is carried out using an oven at a temperature of 100°C for 60 minutes. This drying process aims to reduce the water content in the nori so that nori is more durable and has a crisp texture.

### Seaweed Nori Quality

Commercial nori has a slightly blackish moss green w arna, brilliant. The fibers are smooth-coarse, homogeneous and intact. The characteristic aroma of seaweed is soft. The texture is Dry, supple, slightly crispy. The taste is savory, when bitten there is a chewy taste and it tastes a bit bitter.

According to Riyanto (2014), high-quality Nori has a smooth dry texture (*hoshi nori*), is bright black and shiny due to *porphyran* pigment content (about 40% in *dried nori*) (Riyanto, 2014). High-quality nori sheets are generally greenish-black, while low-quality nori is green to light green. One sheet of dried nori weighs 2.5 to 3 g or 3.5 to 4 g (FAO 2008). Nori is used to wrap sushi (makizushi) and rice balls (onigiri) as well as other Japanese specialties. Besides being able to be consumed directly as a snack, nori is also used as a decoration and flavoring of various dishes.

According to Teddy (2009), good quality nori is a greenish-black nori sheet, while the lower quality nori is green to light green, but so the color cannot be used as a quality handle. According to Nisizawa (2002), the color of Japanese nori is black and greenish, this is due to the content of chlorophyll a and phycobilin in *Porphyra* seaweed. Another determinant of nori quality is to have a high tensile strength. In addition, the water content is also a determinant of

good quality of nori, nori which has a high water content characterizes the decrease in quality in the nori, because the moisture content in foodstuffs helps determine the freshness and durability of these foodstuffs (Teddy, 2009)

### Conclusion

Based on the literature study above obtained information that the manufacture of nori from *Kappaphycus alvarezii* seaweed consists of 7 stages, namely seaweed cleaning, seaweed soaking, washing, smoothing, seaweed porridge cooking and mixing with other additives, printing and drying. The quality of nori is based on its physical properties, namely tensile strength, organoleptic properties such as color and texture, its chemical properties are water content.

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