

SEAWEED POWDER

Specification

TECHNICAL FIELD

- 5 The present utility model relates to a seaweed powder made from specific seaweed species.

BACKGROUND OF THE UTILITY MODEL

- 10 Seaweeds are marine macroalgae that are often classified based on the pigments they possess; *Phaeophyceae* for brown seaweeds, *Chlorophyceae* for green seaweeds, and *Rhodophyceae* for red seaweeds. Seaweeds can be consumed directly as food such as salad or can be used as a food ingredient such as in the preparation of soup stocks. When processed, hydrocolloids such as alginate, agar, and carrageenan can be obtained from seaweeds. This gives them great commercial
15 importance since these compounds are widely used in various industries such as pharmaceutical, nutraceutical, agricultural, and food industries (Palani, 2025).

- There are numerous prior arts that disclose seaweed powder from specific species and the related preparation steps. One such prior art is “Production of Gracilaria powder” by Aquino *et. al.* In this study, Gracilaria powder is produced
20 and the process standardized with desirable microbiological qualities, sensory qualities, and physico-chemical properties and proximate composition. In the production of Gracilaria powder, three treatments were prepared to determine the best way of washing and cleaning the Gracilaria seaweeds. Treatment one (T1) was untreated or washed with potable water, Treatment two (T2) was treated with
25 Sodium Metabisulfite and Treatment three (T3) was treated with Chlorine. The best treatment was Treatment two (T2) with 28 MPN/g *Escherichia coli* count, 120 CFU/g Mold and Yeast Count and 630,000 Aerobic Plate Count. Sensory qualities were also determined by trained panelists as to color, texture, and aroma. Overall, Gracilaria powder was dark brown, granulated, and with a perceptible seaweed
30 aroma. Using the Treatment two (T2), Gracilaria was turned into powder by cooking, drying, pulverizing, and sifting. Powdered Gracilaria was submitted for

physico-chemical properties, proximate composition and microbial composition and the results obtained were 0.537 Aw at 24.700C, 6.92% ash, 12.61% Moisture, 3.31 Crude Fat, 14.58% Crude Protein, 12.00% Iodine, 60.64% Dietary Fiber, 95.93 mg/100g Iron, 615.88 mg/100g Calcium and 647.34 mg/100g Sodium. The
5 produced Gracilaria powder will be used to develop, formulate, and standardize Gracilaria enriched products.

However, the prior art has not included the other species which will be further discussed in the following sections.

10 SUMMARY AND OBJECT OF THE UTILITY MODEL

The present utility model is a seaweed powder made from *Eucheuma* sp., *Kappaphycus* sp., and *Gracilaria* sp. The seaweed powder further exhibits specific color parameters, moisture content, and microbial content.

It is the object of the present utility model to provide a seaweed powder that
15 has acceptable physical properties and microbial content.

DETAILED DESCRIPTION OF THE UTILITY MODEL

The present utility model will be further described herein.

20 The present utility model relates to a powder usable as food ingredient, wherein the source is seaweed, specifically, the seaweed which includes but not limited to, are *Eucheuma* sp., *Kappaphycus* sp., and *Gracilaria* sp.

The seaweed, when obtained from source, should be fresh or soaked in seawater while in transit.

25 The seaweed is cleaned by removing any unwanted material. Preferably, this is conducted by washing first with seawater, subsequently with fresh water, until low level of salinity is achieved.

Afterwards, it is preferred that mechanical removal of water is conducted. This is done via subjecting the seaweed to a centrifugal spin dryer for around 5-7
30 minutes. The seaweed is placed first in a mesh bag before subjecting to said method.

An additional manual cleaning of the seaweed may be conducted after spin drying to make sure that there are no unwanted materials left. Afterwards, centrifugal spin drying is repeated.

Disinfection is conducted to reduce the microbial load of the seaweed. In the preferred embodiment, a food-grade disinfectant is used to disinfect the seaweed, specifically, sodium metabisulfite at an effective concentration. In a more specific embodiment, 1.5-2.5% sodium metabisulfite solution is prepared and the seaweed is soaked in the solution for 10-15 minutes, following a 1:2 ratio (kg seaweeds/L sodium metabisulfite solution).

After disinfection, the disinfectant is removed via repeated washing of the seaweed in water (distilled or potable) for an extended period.

After repeated washing of the seaweed, the seaweed is then soaked in distilled water for 24 hours under refrigeration to remove residual sulfites and salt. Storage temperature is preferably within the range of 3 to 5°C.

After the refrigeration in soaked water, the seaweed is spun dry to remove any excess water.

The seaweed is then next dried preferably with the use of controlled temperature and humidity to avoid degradation of heat-sensitive components of the seaweed. It is then preferable to dry the seaweed in a low heat, low humidity drying system. The seaweed is laid out on a perforated tray and dried at 40-65°C, for 4-6 hours or until moisture content reaches below 10%.

The dried seaweed is then pulverized into fine powder with consistent particle size. Preferably, this is done using industrial milling equipment such as but not limited to hammer mill, pin mill, or pulverizer. In a specific embodiment, the dried seaweed is powdered using an upright hammer mill to produce food-grade powder.

Tests

Physicochemical tests are conducted to check the water activity, moisture content, microbial content, and color values of the product. Below tables summarize the results obtained.

Parameter	Value
Moisture content	4 – 9%
Water activity level	0.20 – 0.40
Color	
L^*	58-62
a^*	1-3
b^*	8-10

Table 1. Physical properties of the product. L^* is a measure of brightness from black (0) to white (100). a^* describes red-green color with positive value indicating redness and negative value indicating greenness. b^* describes yellow-blue color with positive value indicating yellowness and negative value indicating blueness.

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Parameter	Value
<i>E. coli</i> count	3.0 MPN/g or less
<i>Salmonella spp.</i> count	Negative
Aerobic plate count	30,000 CFU/g or less
Mold and yeast count	Less than 100 CFU/g

Table 2. Microbial content of the product.