

Seaweed recipes and other practical uses of Seaweeds

V. S. Krishnamurthy Chennubhotla, N. Kaliaperumal and S. Kalimuthu

Regional Centre of Central Marine Fisheries Research Institute, Mandapam Camp.

Seaweeds (a plant group of the sea), in botanical terms "Algae" form an important food item in many countries of the East as well as West. In China, marine algae bears the name sea-vegetable and it is not uncommon for coastal inhabitants of Japan, Malaya, China and Phillipines to be seen on the seashore during low tide collecting these sea-vegetables. Korea and Japan are the two countries where algae are farmed, but only in Japan extensive seaweed cultivation is done.

The seaweeds in India also are used to certain extent as food, and in coastal areas of Tamil Nadu a particular type of seaweed (*Gracilaria edulis*) is being used since decades for making gruel.

A few recipes like Ulva jam, agar jelly, some food products requiring agar, Seaweed salad, vegetable curry and porridge and some other practical uses to which these seaweeds can be put to, are elaborated below.

The distribution of these seaweeds in Indian coasts and their nutritive value etc. are discussed in a separate paper (Food from the sea; Food from the seaweeds).

I. RECIPES

1. ULVA JAM

Ulva plants like *Ulva lactuca* and *Ulva reticulata* are collected, dried and washed several times in fresh water until they are bleached well. Then the material is powdered. Sugar syrup is prepared and in the boiling condition the powder is added and left to boil for about 30 minutes. When the material is boiled well, colour and essence are added. The vessel is removed from the heater. The jam is cooled and bottled immediately. This can be used just like any other jam, along with bread, chappathi etc.

2. AGAR JELLY

(For Agar-agar please see item III)

Fresh *Gracilaria* or *Gelidiella* plants are collected and sundried for three days. They are washed several times in soft water to remove sand, lime, sea salts and other adhering matter and spread in the sun till dry. The seaweed is ground in a stone mortar adding water and placed in a spacious tray or basin with soft water for 24 hours in a cool, airy place. The pulp is dried thoroughly in the sun and pulverised in a coffee grinder.

One litre of soft water is boiled in an enamel or stainless steel vessel.

To the boiling water 100 grms. of seaweed meal is added and stirred from time to time, and then it is filtered through an organdy cloth. Sugar to the taste (approximately 1 kg.), lime juice, essence and colouring matter are added to the extract and again it is filtered in a tray

through the organdy cloth. It is allowed to cool under a fan.

They are served after cutting into pieces. Instead of seaweed meal, the agar strips (China grass) available in the market or with the agar factories may also be used for preparation of agar jelly as above.

3. FOOD PRODUCTS REQUIRING AGAR (From Thivy, 1958)

Food stuff	Quantity of agar used	Method of addition
Ice-Cream	1/8 teaspoonful ($\frac{1}{4}$ g) per cup of ice-cream mix	Dissolved in boiling water and added to warm ice-cream mix. (Prevent it from melting soon)
Tomato sauce	$\frac{1}{2}$ teaspoon ful (1g) per 1b. of tomato sauce	Dissolved in boiling water and added to the sauce towards the end. Boiling after adding agar should be avoided.
Jams, Jelly, Marmalade	One level teaspoon ful (2g) per 1b. of these	Dissolved in boiling water and added to the sauce towards the end. Boiling after adding agar should be avoided.
Blancmange (without corn flour)	1 $\frac{1}{2}$ level teaspoonpul (3g) per cup of milk with sugar	Dissolved agar in a small amount of water in a double boiler and poured into warm milk, not vice-versa.

4. SEAWEED SALAD

(prepared using any of the following seaweeds)

- a) *Caulerpa racemosa*, *C. sertularioides*, *Codium muelleri* and *Sargassum siliquosum*.

Seaweeds are cleaned of sand, debris attached stones, then washed in fresh water. Chopped tomatoes and onions are added. Salt is added to taste.

- b) *Gracilaria confervoides* and *G. eucheumoides*

Seaweeds are washed free of dirt, sand and salt water. Then

tomatoes, onions, ginger and salt are added to the raw or blanched seaweeds.

- c) *Hydroclathrus clathratus*

Seaweeds are washed thoroughly in fresh water, the tomatoes, ginger and patis (fermented fish sauce) are added. Salt is added to taste. Ready to serve.

- d) *Laurencia papillosa*

Washed thoroughly, and mashed tomatoes added. Ready to serve.

- e) *Periphyra sp.*

Washed thoroughly, then tomatoes, ginger and salt added. Ready to serve.

When the seaweed is used in the form of sheets they are soaked in hot water, washed and drained thoroughly after which tomatoes, ginger and salt are added. Ready to serve.

5. SEAWEED VEGETABLES

(prepared using the following seaweeds)

a) *Gracilaria eucheumoides*

Seaweeds cleaned, then added to fish preparation recipes having soup.

b) *Sargassum siliquosum*

Seaweeds cleaned and cut into pieces, then added to the hot fish preparation with soup.

6. SEAWEED CURRY

(prepared using any of the following seaweeds)

Acanthophora spicifera and *Caulerpa serrulata*

Fresh seaweeds are washed in fresh water to remove stones, sand etc. Boiling water is then poured into the cleaned seaweed and drained after one minute. Then chopped tomatoes, onions, ginger and patis are added to the seaweed. Vinegar or calamansi can be used instead of tomatoes.

7. SEAWEED PORRIDGE (Seaweed gruel) or SEAWEED KANJI

Some of the seaweeds like *Gracilaria edulis* are used for the preparation of porridge in the coastal districts of Tamil Nadu. The seaweed is boiled with water just as done in the preparation of rice gruel. Finally it is taken with little salt.

The items Agar-jelly and seaweed porridge are very popular in coastal areas of Tamil Nadu, while the salade, vegetables and curries of seaweeds are popular in foreign countries like

Philippines, Japan, China etc. for which trials are to be made in India also for popularising them. The recipe for the ulva jam was evolved at Central Marine Fisheries Research Institute and was found to be very delicious.

II. OTHER PRACTICAL USES OF SEAWEEDS

1. SEAWEED MANURE

Use of seaweeds as manure is a common practice in coastal areas throughout the world. In India also it is used for coconut plantations especially in Tamil Nadu. The high amount of water soluble potash and other minerals present in seaweeds are readily absorbed by plants. The carbohydrates and other chemicals present in the seaweeds improve the moisture retaining capacity of the soil and control certain plant diseases. Therefore all seaweeds and seagrass (growing as well as cast ashore) can be used as manure either directly or in the form of compost.

2. SEAWEED COMPOST

Compost of seaweeds, fish offal and sharkliver sediments (15:3:4 by weight) taking three months to be stabilized, can be prepared. This compost has 2.4% N, 0.7% P and 3.5% Potash which is of high manurial value. The yield per plant per season in case of plants receiving compost is more than those receiving cowdung and wood ash. The peak fruiting season advances by one month in the former plants. Marked differences can be seen in six weeks and the standard size of fruits will be available in two weeks earlier than the plants receiving cowdung and wood ash and three weeks earlier than the plants receiving

only wood ash. In the field trials conducted at C. M. F. R. Institute to study the effects of Hepnea compost (Hypnea and the cowdung are kept in alternating layers in a pit, covered with leaves for a period of 3 months) on Bhindi, 73% increase in yield was observed. Remarkable results were obtained with tuberous crops like sweet potato and tapioca and other vegetable plants.

3. SEAWEED MEAL FOR POULTRY AND CATTLE

As seaweeds are cheap sources for minerals and trace elements, meals prepared from seaweeds can be utilised as supplements to the daily ration of the cattle, poultry and other farm animals. Seaweed meals can be prepared from *Ulva*, *Enteromorpha*, *Gracilaria*, *Hypnea*, *Largassum*, *Aadina*, *Dictyota* etc. by pulverising the cleaned

and washed weeds. It can be mixed with fish meal also and used as a poultry feed.

III. SECONDARY FOOD PRODUCTS DERIVED FROM SEAWEEDS

1. AGAR - AGAR

It is a carbohydrate extracted from certain red seaweeds like *Gracilaria* and *Gelidiella*. It is used in many industries like pharmaceuticals, food and confectionary, rubber, paint and varnishes and electric bulbs, photo-films and also a culture medium in bacteriology and mycology.

2. ALGIN

It is a carbohydrate extracted from certain brown seaweeds like *Sargassum* and *Turbinaria*. It is used in textiles, paper, pharmaceuticals, canning cosmetics, food industry etc.

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