

THE SECRET HEALTH BENEFITS OF EDIBLE SEAWEEDS - SEA VEGETABLES

N.Mangaiyarkarasi, Emeritus Professor- UGC- Fellow
Centre for Music Therapy Education and Research (CENTER),

Sri Balaji Vidyapeeth, Mahatma Gandhi Medical College and Research Institute Campus

Pillaiyarkuppam, Puducherry - 607403, India

Email: mangai33@yahoo.co.in

Abstract ►

If you thought vegetables only grew in soil on land, you're mistaken. Simple to cook and easy to serve in your favourite dishes, sea vegetables are plentiful, full of flavour and have a gamut of health benefits. Nutritionists and chefs around the world consider sea vegetables as pearls of the vegetable family as they add depth to cooking repertoire. Sea vegetables are neither plant nor animals but classified in a group known as 'algae' popularly "Seaweeds". They commonly grow on coral reefs or in rocky landscapes and can be found in the sea. This article provides an overview of edible seaweeds.

Key Words: Sea vegetables, Nutrients, Antioxidants, Edible seaweeds.

Introduction

Sea vegetables consumption enjoys a long history throughout the world. Archaeological evidence suggests that Japanese have been consuming sea vegetables for more than 10,000 years. In ancient Chinese cultures, sea vegetables were a noted delicacy, suitable especially for honoured guests and royalty. Korea, Vietnam, and Malaysia are other Asian countries where sea vegetables are widely consumed. Yet, sea vegetables were not just limited to being a featured part of Asian cuisines. In fact the countries located by waters, including Scotland, Ireland, Norway, Iceland, New Zealand, the Pacific Islands and coastal South American countries have been consuming sea vegetables since ancient times.

Sea vegetables have 10 – 20 times more nutrients and minerals than land vegetables. In addition, sea plants are an excellent source of iron, calcium, iodine, proteins, amino acids, fatty acids and vitamins. For example, wakame and hijiki contain calcium 10 times more than that of milk. The minerals in [sea vegetables](#) exist in chelated, colloidal form that makes them readily 'bio available' for use in body functions. Population studies showed that people with a regular intake of [sea vegetables](#) led to reduced symptoms of mineral depletion and longevity of people in Okinawa (Island in Japan)¹.

Figure 1: Some of the important seaweeds.



Acanthophora sp.



Caulerpa sp.



Sargassum sp.



Gracilaria sp.



Cappaphycus sp.



Fucus sp.



Acetabularia sp.

Nutritional value of edible sea-weeds

As discussed, seaweeds are great source of magnesium, potassium and calcium. Deficiency of these minerals may result in muscle cramps, which can be reverted with regular consumption of seaweeds. Sea weeds also contain unique phyto-nutrients, like sulphated polysaccharides (fucoidans). Unlike land vegetables, sea vegetables need not depend on carotenoids and flavanoids for antioxidant properties, as they contain other types, including alkaloid anti oxidants². Sea vegetables also contains other nutrients such as iodine, vitamin C, manganese, vitamin B2, vitamin A (in the form of carotenoids), pantothenic acid, potassium, iron, copper, zinc, vitamin B6, niacin, phosphorus, and vitamin B1.

Over the last few decades, researchers have discovered that a diet rich in sea vegetables may reduce the risk of diseases like cancer, osteoporosis and obesity, in addition, helps the body eliminate toxins by improving water metabolism³. In Chinese medicine, seaweeds were claimed to have cooling effect in the body, cleanse the blood, softens the hard lumps and cysts. Nutrients in [sea vegetables](#) were found to cleanse the colon and improve digestion and absorption. Scientists at the University of Newcastle-upon-Tyne have found that alginate, the sticky starch present in brown [sea vegetables](#), can strengthen gut mucus, slow down digestion and make food release its energy more slowly⁴.

Sea vegetables contains good amount of bioavailable iron. One tablespoon of dried sea vegetable contains 12-35 mg of iron, which is also accompanied by a measurable amount vitamin C. Since vitamin C increases the bioavailability of plant iron, this combination in sea vegetables was found to be beneficial.

A study comparing the faecal flora resulting from the Japanese diet with that of Western diet found that the Japanese diet leads to increased number of beneficial aerobic microorganisms⁵, which may be due to the antibiotic activity of [sea vegetables](#) that destroys harmful anaerobic bacteria.

Brown algae (including the commonly eaten, Kombu /kelp and Wakame) were found to be unique among the sea vegetables in their iodine content. Some species from the brown algae genus *Laminaria* can accumulate iodine up to 30,000 times more concentrated than sea water.

Figure 2: Dishes made from seaweeds.



Seaweed Salad



Ulva Salad



Seaweed Soup

Health benefits of edible seaweeds

An increasing number of health benefits from sea vegetables are being explained by their fucoidan content. Fucoidans are starch-like (polysaccharide) molecules, but they are unique in their complicated structure (which involves a high degree of branching) and their sulphur content. Numerous studies have documented the anti-inflammatory benefits of fucoidans (sometimes referred to as sulphated polysaccharides) in osteoarthritis⁶.

The sulphated polysaccharides in sea vegetables also have anti-viral activity which was studied against

herpes simplex virus 1 (HSV-1) and herpes simplex virus 2 (HSV-2). By blocking the binding sites used by HSV-1 and HSV-2 for cell attachment, sulphated polysaccharides inhibit the replication of these viruses. The sulphated polysaccharides in sea vegetables also have important anticoagulant and anti-thrombotic properties that provide significant cardiovascular benefits⁷. [Sea vegetables](#) are known to remove heavy metals and radioactive pollutants from the body. Scientists at McGill University in Canada showed that sodium alginate removes the radioactive element strontium, along with heavy metals such as cadmium and lead⁸.

Sea vegetables may play a role in lowering risk of estrogen-related cancers, including breast cancer. Since cholesterol is required as a building block for production of estrogens, the cholesterol-lowering effects of sea vegetables may play a risk-reducing role in this regard. However, more interesting with respect to breast cancer risk is the apparent ability of sea vegetables to modify aspects of a woman's normal menstrual cycle in such a way that over a lifetime, the total cumulative estrogens secretion that occurs during the follicular phase of the cycle gets decreased. Dr Jane Teas of Harvard University has proposed that kelp (Kombu and Wakame) consumption might be a factor in lower prevalence of breast cancer in Japan⁹. [Sea vegetables](#) are very high in lignans, plant substances that mimic estrogens in the body and block the estrogen receptors, reducing the risk of cancer¹⁰.

The phycocolloid, algin in all brown algae, and carrageenan, agar in many red algae, aggressively trap metallic ions. The isolated colloids and/or the seaweeds containing them can be used to remove heavy metals from food and excrete them in the stool. Although many sea weeds contain minimal

radioactive elements, studies found that these elements are usually not released into our food or bodies. Powdered kelp(s), algin, even sodium alginate, are effectively used to remove radioactive and heavy metals from the body. The metabolic process is slow and deliberate.

While sea vegetables contain measurable amounts of polyphenols like carotenoids and flavonoids, they also contain other phyto-nutrient antioxidants that have been shown to possess antioxidant properties¹¹. Coupled with measurable amounts of antioxidant vitamins (like vitamins C and E) and antioxidant minerals (like manganese and zinc), sea vegetables are expected to reduce the risk of oxidative stress and many types of cardiovascular problems that are associated with poor antioxidant intake.

Conclusion

There are thousands of types of sea vegetables, which are classified into categories by colour, known either as brown, red or green sea vegetables. Each is unique, having a distinct shape, taste and texture. Although not all sea vegetables that exist are presently consumed, a wide range of sea vegetables are edible and commercially available. Since Japan remains one of the world's largest sea vegetable producers and exporters, the words we use to describe sea vegetables like nori, hijiki, wakame, arame, and kombu are Japanese. Dulse, however, is of Gaelic origin.

The broad range of minerals provided by sea vegetables makes them a great addition to the healthiest way of eating. One easy way is to keep a container of kelp flakes on the dinner table and use it instead of table salt for seasoning foods. It can also be added to vegetable dishes, salads, and miso soups, as they do not require cooking.

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