

Sea Vegetables

By Maine Coast Sea Vegetables

Minerals and Trace Elements

Sea vegetables provide all 56 minerals and trace elements required for your body's physiological functions in quantities greatly exceeding those of land plants. Examples:

- About 1/3 cup serving of Dulse or Kelp gives up to 30% of the RDA of iron, four times the amount in spinach, and more than kidney beans, apricots, and peas
- The same size serving of Alaria contains more calcium than ½ cup boiled kale or bok-choy
- Magnesium is twice as abundant in Kelp and Alaria than in collard greens, and exceeds walnuts, bananas, potatoes, oatmeal, and even sockeye salmon.

Sea vegetables present these essential nutrients to your body in a chelated and colloidal, optimally balanced form so they are bio-available—that is, your body “understands” how to absorb and utilize them. Major minerals examples are:

- Calcium (for skeletal health, healthy heartbeat, nervous system function)
- Magnesium (activates enzymatic activity, essential for healthy heartbeat)
- Potassium (naturally prevents high blood pressure, provides cellular energy)
- Sodium (essential for the correct balance of body fluids—our internal “ocean”)
- Iron (as hemoglobin, transports and distributes oxygen to all your cells)

Trace elements are especially essential to the countless enzymatic functions constantly occurring in your body. Examples are:

- Chromium (works with insulin to regulate blood sugar)
- Iodine (thyroid health)
- Copper (protects nerve sheaths, builds supple arteries, required for iron absorption)

Finally, consider this somewhat poetic image: we evolved from simple unicellular creatures in the briny, mineral laden Mother Ocean. Now, billions of years later, our “inner ocean”—the saline fluids around and in our cells and organs—recreates the primal birthing

environment, with a similar range and balance of minerals. Sea vegetables concentrate this mineral matrix. When you eat sea veggies, your cells recognize this natural, harmonious, health giving balance.

What about Sodium?

Sodium is a major mineral that is essential to human health and life. Along with potassium it provides the electrolytic “battery” that pumps nutrients in and out of cells. It also works with potassium to maintain the proper balance of fluids inside and outside each cell. The evolutionary assumption is that dietary sodium is not easily found in the environment; therefore our bodies are set up to retain scarce and valuable sodium. Sodium's partner, potassium, was plentiful in the evolutionary diet (found in vegetables, nuts, seeds, and fruits) and so we do not retain potassium.

Modern humans run into trouble when our modern “civilized” diet reverses the natural availability of sodium and potassium—potassium is leached out of processed foods, and sodium is used extravagantly as a flavor enhancer and preservative. Topsy-turvy! Because this imbalance—and the lack of magnesium and calcium—is implicated in high blood pressure disease, and because unnatural, manufactured table salt is exclusively sodium chloride, sodium has gotten a bad rap! Sea vegetables provide bio-available, essential sodium balanced with potassium (as well as with calcium and magnesium) at relatively low levels per serving...

What about Iodine?

Dr. Ryan Drum, noted herbalist and sea vegetable gatherer, states in *Therapeutic Use of Seaweeds* (Proceedings of the 2001 Pacific Northwest Herbal Symposium) *Seaweeds, eaten regularly, are the best natural food sources of biomolecular dietary iodine... no land plants are reliable sources of dietary iodine.*

For comparison, you would have to eat about 40 lb. of fresh vegetables and/or fruits to get as much iodine as you would from one gram of whole leaf kelp.

Iodine is the main component of the hormone produced by the thyroid gland, which regulates our metabolism—thyroid hormone accelerates cellular reactions, increases oxygen consumption and basal metabolism, and influences growth and development, energy metabolism, differentiation and protein synthesis.

Dr. Linda Rector Page, author and herbalist, writes in *Healthy Healing* (pg 205): *Iodine is essential to life...*

it is an important element of alertness, and rapid brain activity, and a prime deterrent to arterial plaque. Iodine is also a key factor in the control and prevention of many endocrine deficiency conditions prevalent today, such as breast and uterine fibroids, tumors, prostate inflammation, adrenal exhaustion, and toxic liver and kidney states.

Unfortunately, not all iodine is good for us and the human thyroid cannot distinguish between life sustaining iodine-127 and radioactive iodine-131. On this subject Ryan Drum further warns, *The real reason for making sure that iodine consumption is at the high end is to insure a full body complement of iodine at all times as preventative medicine against the next nuclear disasters [whether from intentional radioactive pollution as the result of armed conflict or terrorism, nuclear power plant failures, or industrial contamination]. A full body load of iodine 127 from seaweeds (or any source) will tend to allow the body to reject topical and air and food-source iodine 131, particularly from fresh milk.*”

In general, brown sea vegetables (kelps) offer more bio-available organic iodine than red sea vegetables (dulse, laver, and nori)...

Sea Veggies and Vitamins

Sea vegetables contain significant amounts of vitamins especially the B vitamins...

Vitamin B-12 shows up in many seaweeds, using several different methods of analysis. But is it really Vitamin B-12, or an “analogue,” a molecule that looks like Vitamin B-12, but it not able to be utilized by the body? Dietitians and nutritionists disagree on this hot topic, a definitive clinical study has yet to be done...

However, an investigation by two researchers in Great Britain in the 1950’s yielded an important clue as to how sea veggies could be a rare vegetable source of Vitamin B-12—which is produced by bacteria and usually found only in animals. They confirmed the presence of cyanocobalamin (Vit B-12) in dulse, but could not find the mechanism by which the plant might be metabolizing the Vit B-12. The two scientists speculated that it was made *perhaps by bacteria living in the surrounding seawater or on the surface of the plant.* (It is well known that various species of bacteria, or epiphytes, use the plants’ surface as their substrate).

So, while we feel it is likely that low temperature dried, minimally processed sea vegetables may be a source of Vitamin B-12, you, of course, must decide

for yourself. Please consult with your health care practitioner if you have any questions about your consumption of B-12.

Sea Veggies and Protein

The protein content of sea vegetables ranges from 16% to 28%. The red sea vegetables, Dulse and Laver, are higher than the browns, Kelp and Alaria. The amino acid composition of these sea veggie proteins is generally well balanced and contains all or most of the essential amino acids (the ones your body can’t produce by itself). Thus the sea veggies provide higher quality protein than certain grains and beans that are lacking one or two essential amino acids, although the sea vegetables provide less quantity per serving...

One of the more important amino acids found especially in kelp is glutamic acid, the basis for synthetic MSG. This amino acid naturally enhances flavors and tenderizes high protein foods like beans while aiding in their digestion. Glutamic acid also improves mental and nervous system activity; provides energy, and is thought to help control alcoholism, schizophrenia and the craving for sugar.

Sea Vegetables and Fats

Sea Vegetables are good for people who are managing their weight. Not only are they very low in mostly unsaturated fat—1% to 2%—their iodine can stimulate the thyroid to increase metabolism and burn calories. Further, their fiber aids digestion.

Brown sea vegetables have been tested for Omega-6 and Omega-3 essential fatty acids, and while they are present in only small amounts, they occur in a favorable ratio of between 1.5 and 2 to 1 (the NIH suggests an optimal ratio of between 2 and 3 to 1). As importantly, sea veggies contribute all those minerals, vitamins, and trace elements needed for the optimum utilization of the omega 3’s and 6’s.

Sea Vegetables and Fiber

Fiber is any substance that remains essentially undigested by the time it reaches the large intestine. A high fiber diet is thought to help prevent certain types of cancer. It also helps glucose metabolism, a factor especially important for diabetics.

The fiber in land plants (oats, apples, and veggies) is made up of cellulose, lignans, and pectin. Sea veggies have their own unique fiber with interesting medicinal

properties... For example, alginic acid in kelp has been shown to be an important detoxifier for radioactive isotopes and heavy metals.

Dulse, Kelp, Alaria, and Laver test about 30% total fiber, about one half of which is soluble fiber and one half insoluble. For comparison, Dulse has about 33% total fiber, as much as oat bran. Of course, because you usually eat a larger serving size of oat bran than of sea veggies, you'll get more fiber per serving from the oat bran. But every time you eat sea veggies, you're getting high quality and very special fiber.

Sea Vegetables and Cancer

Sea vegetables have been used for centuries in Japanese and Chinese medicine for treatment of cancer. Recent scientific research has started to verify this traditional usage. For example, a study in 1995 demonstrated anti-tumor activity in kelp (*Ascophyllum* and *Fucus* species) against leukemia P-388. Certain compounds in kombu (*Laminaria japonica*) and wakame (*Undaria pinnatifida*) have been shown to have anti-mutagenic activity. Fucons (sulfated polysaccharides) extracted from brown sea veggies—the “kelps”—have been shown to inhibit cell growth, which means they may be able to inhibit the growth of cancer cells. In fact, a Japanese investigation duplicated a traditional Chinese medicinal formula using kelp (*Laminaria* species) and achieved reduction in size and number of tumors in laboratory experiments.

Currently very exciting work with cancer and sea veggies is being done by Dr. Jane Teas who is affiliated with the Interdisciplinary Programs and Health at the Harvard School of Public Health. In 1981 she published a paper on a number of well-documented reasons why the consumption of seaweed, particularly the kelps, might be a factor in the lower rate of breast cancer found in postmenopausal women in Japan. It has been noted that many sea vegetables contain significant amounts of lignans, more than legumes, whole grains, vegetables and fruits (but less than flaxseed). These lignans become phytoestrogens in the body and bond preferentially to the estrogen receptor site. Thus they may have therapeutic and preventative value against cancers in which estrogen plays a part, such as breast cancer.

Dr. Teas is now conducting research on 25 postmenopausal women to see if alaria (and other brown seaweeds) supply enough phytoestrogens to provide an effective, natural alternative to estrogen replacement therapy.

Dr. Ryan Drum, Ph.D., states that fucoidan (a compound found in brown sea vegetables such as kelp and bladderwrack) *Is extremely anti-proliferative against cancer cells. It also interferes with every stage of viral attack: cell attachment, cell penetration, and intracellular virion production.* As an interesting indication of our deep biological connection to the sea vegetables, Dr. Ryan points out that *All human cells studied are found to have receptor sites for Fucose, the end-group sugar on fucoidan.* (from his papers *Sea Vegetables and Seaweeds, and Seaweed Therapeutics*, PHWHS 2001).

Finally, Dr. Andrew Weil reports in his newsletter that *Scientists at the National Cancer Institute are now investigating the anti-cancer properties of seaweeds...*

Sea Vegetables and Heart Disease

Traditional oriental medicine has long held that the use of seaweeds reduces the risk of heart disease. Recent research cited by Dr. Zakir Romazanov in *Neutraceuticals World* (Vol.2, No. 6) claims that certain elements in bladderwrack (*Fucus vesiculosus*) and rockweed (*Ascophyllum nodosum*) have the ability to lower blood plasma cholesterol levels, a key to heart health. Dr. Seibin Arasaki in [Vegetables from the Sea](#) also identifies five different studies involving numerous seaweed species that have shown cholesterol-lowering activity.

Lowering blood pressure is another way of taking care of the heart. High levels of potassium in the blood have been proven to help reduce the risk of high blood pressure. All seaweeds offer extraordinary levels of potassium...

Sea Vegetables and Hypertension

Back in the late 60's in England Dr. Eric Powell, Ph.D., N.D., successfully treated patients suffering from hypertension with Bladderwrack (*Fucus* sp), which he called kelp. He writes in his book [Kelp, the Health Giver](#) (distributed by NutriBooks), *Kelp has a normalizing action on the thyroid and parathyroid. Better function of the parathyroid glands means that the system can take up and utilize mineral matter to the best advantage: in particular calcium, iodine, and sodium which all play a part in maintaining the health and elasticity of the arterial walls.*

Debra Ahern, Ph.D., R.N., reporting her findings in the *Journal of the American Dietetic Association* (Vol.89, No.7), sees it a little differently. It is well known to dietitians that people with low blood potassium levels are more prone to hypertension. Dr.

Ahern maintained that seaweed-based seasonings provide not only high concentrations of potassium but also chloride, a means of retaining this potassium. In her study she says, *Chloride may play an indirect positive role in hypertension by allowing renal retention of potassium. If this is the case, potassium sources that provide chloride may be more effective in raising blood plasma levels than fruits and vegetables. The high chloride content of those seasonings with seaweed may make them good sources of potassium of clients at risk of hypokalemia (too little potassium).*

And finally, an article, “Blood Pressure and Nutrient Intake,” from U.S. Science magazine states that higher intakes of calcium, potassium, and sodium are associated with lower mean systolic pressure and lower absolute risk of hypertension.

Sea Vegetables and Radioactive/ Heavy Metal Detoxification

Sea vegetables’ effectiveness in treating radiation and heavy metal poisoning is well documented and well known worldwide. The first studies on fighting radiation poisoning with seaweed were started 30 years ago at McGill University in Montreal, Canada. Researchers found that alginic acid, one of the important intercellular poly-saccharides found in large brown algae like Kelp and Alaria, could reduce the amount of strontium 90 absorbed through the intestinal wall. (S.C. Skoryna et al, “Intestinal Absorption of Radioactive Strontium,” Canadian Medical Association Journal 191, 1964)

Even the U.S. government has done research on the detoxifying qualities of alginates from Kelp. The EPA’s Environmental Toxicology Lab found that alginates could bind and eliminate both radionucleides such as Strontium 90 and heavy metals such as cadmium. They also discovered that Strontium already stored in the bones was re-secreted and bound by the alginates and safely passed through the intestines. Thus the remarkable kelps can help alleviate past as well as present toxic contamination. (Steven Schacter, Fighting Radiation with Food, Herbs and Vitamins, East West Health Books, 1988)

After the Chernobyl nuclear disaster in Russia Maine Coast Sea Vegetables noticed an increase in sales of Kelp and joined with other small producers in sending a kelp care package to survivors. The Russians have been seriously researching the use of their kelps from Vladivostok, from which they have isolated the polysaccharide U-Fucoidan, a radioactive detoxifier.

Another very important function of sea vegetables in helping our bodies fight radiation poisoning takes place in the thyroid gland, where radioactive Iodine 131 (for example, from a nuclear power plant emission) can accumulate. Dr. Ryan Drum tells us that *We are regularly taking in radioactive isotopes from the total world contamination by continual radioactive fallout from all nuclear power plants, weapons facilities and past nuclear tests.*

If our thyroid is full with “healthy” iodine, it will not absorb the radioactive contaminant. So it serves us well to keep our thyroids full of natural, organic iodine. Sea vegetables are the best food source of iodine. Of all the sea vegetables, Kelp is the most significant source...

Sea Vegetables as an Anti-inflammatory

Traditional uses of sea vegetables particularly in Asia have shown it to provide some therapeutic effect on the inflammatory response, particularly in tissue wounds. Ryan Drum, Ph.D., herbalist and seaweed specialist, asserts that fucoidan is the bio-active element in brown seaweed responsible for lessening the inflammatory response...

Sea Vegetables as an Anti-viral

Ryan Drum, Ph.D., herbalist and seaweed specialist, indicates several elements in sea veggies that make plausible their traditional use as antivirals. Fucoidan, a water soluble compound found in the brown algae, has been shown to interfere with every stage of viral attack: cell attachment, cell penetration, and viral intracellular penetration. He also notes that certain polysaccharides or glycoproteins from red seaweeds (dulse and laver are red seaweeds) have been successfully used in treating genital herpes and Herpes Zoster. He also notes in the seaweed literature that carrageenan derivatives have expressed strong antiviral activity.

Sea Vegetables and Joint Pain

Thalassotherapy in European spas and seaweed baths in the British Isles have been traditional methods of relieving muscle and joint pains. Victorian English flocked to the seaweed baths and immersed themselves in very hot water filled with Bladderwrack (Fucus species) or other highly mucilaginous seaweeds with high iodine content to ease their aches and pains. A number of these bathhouses still exist and more are being planned in Western Ireland, according to Ryan Drum, Ph.D. He also believes seaweed can help with knee joint deterioration. He

treated a 50-year-old woman with such severe knee pain she was forced to walk with a cane. By soaking her knees daily for almost a year in 16" high rubber boots filled with a bladderwrack suspension (bladderwrack in hot water), he reported a complete recovery. Dr. Drum speculates that her success might be attributed to fucoidan and the biomolecular iodine compounds that were passing transdermally into her legs.

Sea Vegetables and the Thyroid

Most seaweeds are a good source of Iodine 127, the biomolecular compound the thyroid gland needs for proper functioning. Ryan Drum, Ph.D., points out that bladderwrack (*Fucus* species) provides diiodotyrosine (DIT) which is a precursor to forming the essential thyroid hormones Thyroxine (T4) and Tri-iodothyronine (T3). He claims that in providing the immediate precursors for T4 and T3 *Fucus* seems particularly effective in treating both hypothyroidism and Graves hyperthyroidism.

Another important reason to get plenty of sea vegetables' Iodine 127 into the thyroid is to prevent uptake of radioactive and toxic Iodine 131, which in modern times has a background presence in our food and air supply, and which is likely to be a major pollutant of a nuclear accident. By "loading" the thyroid with healthy Iodine, we can maintain our health even if fallout levels increase dramatically...

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