

KELP
(*Ascophyllum nodosum* and *Laminaria digitata*)

From pg 27 below:

Another extremely important area of Modifilan application is in the environmental medicine. Polysaccharide laminarin has been shown in four animal species (mice, guineapigs, dogs, and monkeys) to prevent acute radiation sickness and death (about LD90) when administered within 24 hours after radiation exposure. This research suggests that the brown seaweed *Laminaria* can be clinically useful in the treatment and prevention of the adverse effects of ionizing radiation.

The non-digestible polysaccharide alginate that comprises 50% of Modifilan's total dry weight has the unique ability of binding heavy metals and radioactive substances to its own molecules. As the alginate is non-digestible it is excreted from the body together with toxic compounds. This is particularly important for cadmium and mercury, as these metals are found at dangerously high levels in air, water and food. Alginate can also remove isotopes that have previously been absorbed by the human body from the environment. Even small amounts of radioactive pollution will expose surrounding cells to harmful radioactive emission. The way alginate facilitates the excretion of toxic substances that find their way into the body from the environment can be shown using, as an example, the elimination of radioactive strontium:

Sr 2+ (food)

Sr 2+ (in GI tract) + alginate = strontium alginate feces

Sr 2+ (blood)

Sr 2+ (bones)

A percentage of Strontium molecules stored in the bone structure (or any other toxic substance stored in the tissue) is constantly released and is traveling with the blood stream. As the blood feeds the saliva and bile, part of the released strontium or other toxic metal ends up in the large intestine. Most of the liquid in the large intestine is reabsorbed by the body including the radioactive isotopes and heavy metals, which are redeposited back into the tissue. Alginate can break this process, as toxic substances are bound to the alginate molecules and released from the body with feces. Alginate binds to all heavy metals including lead, mercury, cadmium, cobalt, copper and radium.

Kelp



Dried Kelp (*Ascophyllum nodosum*)

Bladderwrack (*Fucus vesiculosus*)

Latin Name: *Ascophyllum nodosum*
Common Names: Kelp

Starwest Botanicals is pleased to offer natural and organic dried kelp, also known as Ascophyllum nodosum and seaweed, as part of its extensive line of quality bulk herbs and spices. [Dried Kelp](#), or seaweed, which naturally grows along shallow coastlines around the world, can be cultivated and used as an excellent source of iodine, iron, calcium and vitamins A, B1, B2, C, D and E. Organic kelp is also an excellent salt substitute.

The superior quality natural kelp, or Ascophyllum nodosum, that Starwest offers is from the nutrient rich coastlines of the Atlantic and can be purchased as [kelp powder](#) or [kelp granules](#) in 4 ounce and one pound quantities. This makes it easy to take kelp as a supplement or include it in herbal mixtures that promote thyroid function.

Helping you benefit from the nourishing and healing qualities of Ascophyllum nodosum, is just one of the ways that Starwest helps you and your family lead a healthy, natural lifestyle. Incorporating kelp powder or kelp granules into your diet along with many of the other bulk organic herbs we provide can ensure that your body gets the vitamins and minerals it needs.

When you buy kelp and other dried herbs from Starwest, you can be assured that you're buying the best organic herbs and products available. All of our bulk wholesale herbs are cultivated by the best growers in the world and quality tested in our in-house laboratory. We are so confident in the superior quality of all of our natural herbs and spices that we offer a 100% satisfaction guarantee.

If you have questions about any of the superior quality [bulk herbs](#), or need assistance placing your order, please don't hesitate to call us at 1-800-800-4372.

Organic Kelp Powder



Click Here for a Detailed Image

Botanical Name: Ascophyllum nodosum
Origin: Canada

Size: 1 lb
SKU: 209385-51
Price: \$3.70

Quantity: Out of stock
Notify me when in-stock

Description:

Common Names: Knotted Wrack, Egg Wrack

Quantity Discounts	
Quantity	Price/ea:
5-24	\$3.52
25+	\$3.15





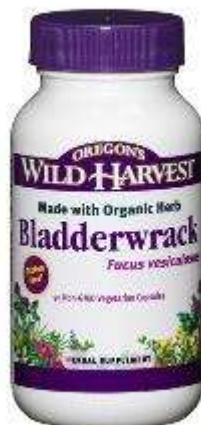


Bladderwrack

[Sea Vegetables as a Source of Iodine](#) - March 15, 2011

Oregon's Wild Harvest considers purity and freshness to be crucial for optimum health supporting benefits. This organic Bladderwrack was carefully harvested and processed to retain these inherent health-supporting properties. [Read more about organic Bladderwrack.](#)

Ingredients: Organic Bladderwrack frond (*Fucus vesiculosus*)



Supplement Facts	
Serving Size: 3 capsules	
Servings Per Container: 30	
Amount Per Serving	
Organic Bladderwrack frond (<i>Fucus vesiculosus</i>)	1800 mg*
*Daily Value not established	
OTHER INGREDIENTS: Polysaccharide (capsule)	

90 ct. (0073-90) - \$11.49

Suggested Use

As an herbal supplement, take three capsules daily.

Sea Vegetables as a Source of Iodine (Kelp)

March 15, 2011

Iodine is in the news, and on everyone's minds, leading to a few questions about our own sources of iodine, and the levels you'll find in Oregon's Wild Harvest's Kelp and Bladderwrack.

Kelp and Bladderwrack provide many beneficial nutrients including natural organically-bound iodine and potassium. Since these are natural sources, the iodine levels vary from year to year and we cannot provide the quantity on the label. **That said, the kelp is rejected if it exceeds a certain level of iodine.** The iodine is tested at every harvest, along with many other important quality markers. Based on typical results, we calculate the following:

The [OWH Kelp](#) product supplies approximately:

- 920 mcg iodine per capsule
- 13.8 mg potassium per capsule

The [OWH Bladderwrack](#) product supplies approximately:

- 400 mcg iodine per capsule
- 13.6 mg potassium per capsule



Iodine Dosage

Ideal iodine dosage is a very controversial topic and more research is apparently needed to determine the optimum dose AND form of iodine. The US RDA of 150 mcg was established as a minimum amount required by the body to prevent cretinism, iodine-deficiency induced goiter, and hypothyroidism. Many experts with an understanding of endocrinology believe that the normal daily requirement for iodine has NOT been established.

The dose that we recommend in our Kelp and Bladderwrack is based on scientific literature. As a responsible manufacturer, consumer safety is our highest priority. Our extensive research suggests that there are many factors which may account for the extremely wide dosage range. The usefulness of any nutrient is dependent upon the bioavailability of that nutrient to the body. Many factors influence bioavailability, including:

- The form of the iodine used -- whether it is isolated and inorganic (potassium iodine) or organically-bound as in natural sea vegetables.
- Other nutrients that are simultaneously ingested. These can compete with iodine absorption.
- Individual metabolism. Certain people are more sensitive to iodine than others, just as some people are sensitive to vitamin C.

Scientifically Recognized Levels

In typical adults, elevated thyroid hormone levels have been found at iodine intakes between 1700 and 1800 mcg/day. Consequently, the Food and Nutrition Board (FNB) of the Institute of Medicine set a tolerable upper level of intake (UL) for iodine at 1100 mcg/day for adults.

Prolonged intakes of more than 18,000 mcg of iodine/day have been found to increase the incidence of goiter.

Dietary Sources of Iodine

It's also worth noting that many people receive dietary iodine from iodine-fortified salt. So those who use sea salt may be consuming less iodine. As of 2000, the average intake of iodine from food in the United States was 240 -300 mcg/day for men, and 190 to 210 mcg/day for women. In Japan, consumption is much greater, due to the frequent consumption of seaweed or kombu kelp. The estimated iodine intake of people in Japan ranges from 200 to 20,000 mcg/day, with the average estimate of 500-1000 mcg/day.

Background and Use

Seaweed has been used medicinally in China for over 5000 years. Bladderwrack was used in the 18th century as a major dietary source of iodine, prior to the iodization of salt. Iodine is required by the body for normal thyroid function. Bladderwrack was also used traditionally as a nutritive tonic as it is rich in trace minerals.

Precautions

Bladderwrack supplements are not recommended for individuals diagnosed with hyperthyroidism. Do not use if pregnant or nursing. Keep out of reach of children. Discontinue if unusual symptoms occur. Do not exceed recommended dose unless under the guidance of a health care professional. Not recommended for long-term use without periodic breaks.

Allergens

A small percentage of people are sensitive to iodine and could develop a painful and enlarged thyroid gland if they consume iodine rich substances such as kelp for longer than one month.

[Certified Organic by Oregon Tilth](#)

Bladderwrack

Bladderwrack (*Fucus vesiculosus*) **Latin Name:** *Fucus vesiculosus* **Common Names:** Bladderwrack

Bladderwrack, which is also known as *Fucus vesiculosus*, has been used historically in a variety of complaints. Starwest is pleased to offer cut and sifted (C/S) Bladderwrack, as well as natural and organic Bladderwrack powder as part of our extensive selection of bulk herbs and spices. At Starwest, the quality of our herbs and spices is paramount, so we only source Bladderwrack from the finest and most environmentally conscious growers worldwide. After each shipment of bulk herbs arrives at our private processing facility, we also clean, mill, blend and package our herbs ourselves. We do this so we can control the entire quality assurance process and offer you a 100% satisfaction guarantee. If for any reason you are ever unsatisfied with an herbs purchase from Starwest, we will promptly remedy the situation.

If you would like to learn more about any of the superior quality bulk herbs or spices we offer through our website, please contact our

helpful customer service department today at 1-800-800-4372. We would be happy to answer any questions you have or assist you with your bulk wholesale herbs purchase.

<http://www.greatvistachemicals.com/herbal-supplements/bladderwrack.html>

Bladderwrack (*Fucus vesiculosus*) is a brown seaweed or algae. As a dietary supplement, bladderwrack is often used to stimulate metabolic rate and promote fat and weight loss. Like many seaweeds, bladderwrack has a relatively high concentration of iodine.

Primary chemical constituents of this plant include mucilage, algin, mannitol, beta-carotene, zeaxanthin, iodine, bromine, potassium, volatile oils, and many other minerals. The main use of Bladderwrack (and other types of seaweed) in herbal medicine is as a source of iodine, an essential nutrient for the thyroid gland. Bladderwrack has proved most useful in the treatment of underactive thyroid glands (hypothyroidism) and goiter. Through the regulation of thyroid function, there is an improvement in all the associated symptoms. Where obesity is associated with thyroid trouble, this herb may be very helpful in reducing the excess weight. It has a reputation in helping the relief of rheumatism and rheumatoid arthritis, both used internally and as an external application upon inflamed joints. A chemical constituent of Bladderwrack called alginic acid swells upon contact with water; when taken orally, it forms a type of "seal" at the top of the stomach, and for this reason is used in several over-the-counter preparations for heartburn. The same constituent gives Bladderwrack laxative properties as well. Other proposed uses of Bladderwrack include treating atherosclerosis and strengthening immunity, although there is no scientific evidence at present that it works for these purposes.

Fucus vesiculosus contains a wide spectrum of polysaccharides including fucoidans and fucans. In general, fucoidans are a family of high molecular weight sulfated polysaccharides, widely dispersed in the cell walls of brown seaweed. The core region (or backbone) of fucoidan is composed primarily of a repeating chain of fucose sugars. Fucose is also attached to this backbone, forming branch points at every 2-3 fucose residues within the chain. The primary theory behind how a brown seaweed can help increase energy levels and stimulate weight loss is that bladderwrack contains a relatively high concentration of iodine. One of the key functions of iodine is that the thyroid gland requires it to produce adequate levels of thyroid hormones. Low levels of thyroid hormones are associated with reduced energy levels and weight gain – so maintaining optimal levels is a key factor in promoting stamina and healthy body weight.

Similar to most plants grown in the ocean, this plant is also very high in iodine and other trace minerals. While iodine is critical for proper health, like most other trace minerals, too much good can be no good. In other words more is not always better. So bladderwrack in an appropriate dose is safe to take long-term; however, you would not want to consume ridiculously large amounts of this plant for indefinite periods of time.

Ascophyllum nodosum is a large, common [brown alga](#) ([Phaeophyceae](#)) in the [family Fucaceae](#), being the only species in the genus *Ascophyllum*. It is [seaweed](#) of the northern [Atlantic Ocean](#), also known as **Norwegian kelp**, **knotted Kelp**, **knotted wrack** or **egg wrack**. It is common on the north-western coast of [Europe](#) (from [Svalbard](#) to [Portugal](#)) including east [Greenland](#)^[1] and the north-eastern coast of [North America](#).^[2]

Description

Ascophyllum nodosum has long [fronds](#) with large egg-shaped air-bladders set in series at regular intervals in the fronds and not stalked. The fronds can reach 2 m in length and are attached by a [holdfast](#) to rocks and boulders. The fronds are olive-brown in color and somewhat compressed but without a mid-rib.^[3]

Life history is of one [diploid](#) plant and [gametes](#). The gametes are produced in [conceptacles](#) embedded in yellowish [receptacles](#) on short branches.^{[2][4]}

Varieties and forms

Several different varieties and forms of this species have been described.

- *Ascophyllum nodosum* var. *minor* has been described from [Larne Lough](#) in [Northern Ireland](#).^[5]

There are free floating ecads of this species such as *Ascophyllum nodosum mackaii* Cotton, which is found at very sheltered locations, such as at the heads of [sea lochs](#) in [Scotland](#) and [Ireland](#).^{[6][7]}

Ecology

Ascophyllum nodosum is found mostly on sheltered sites on shores in the mid-littoral where it can become the dominant species in the [littoral zone](#).^{[8][9]}

The species is found in a range of coastal habitats from sheltered [estuaries](#) to moderately exposed coasts, often it dominates the inter-tidal zone (although sub-tidal populations are known to exist in very clear waters). However it is rarely found on exposed shores, and if it is found the fronds are usually small and badly scratched. This seaweed grows quite slowly, 0.5% per day; carrying capacity is about 40 kg wet weight per square meter and it may live for 10–15 years. It may typically overlap in distribution with [Fucus vesiculosus](#) and [Fucus serratus](#). Its distribution is also limited by salinity, wave exposure, temperature, desiccation and general stress. These, and other attributes of the algae are summarized in Schonbeck & Norton (1980).^{[10][11][12]} It may take approximately five years before becoming fertile.

Polysiphonia lanosa (L.) Tandy is a small [red alga](#), commonly found growing in dense tufts on *Ascophyllum* whose [rhizoids](#) penetrate the host.^[13] It is considered by some as [parasitic](#), however as it only receives structural support from Knotted Wrack (i.e. non-parasitically), it acts as an [epiphyte](#).

[edit] Distribution

Recorded in [Europe](#) from: [Faroe Islands](#),^[14] [Norway](#),^[15] [Ireland](#), [Britain](#) and [Isle of Man](#),^[16] [Netherlands](#),^[17] North America: [Bay of Fundy](#), [Nova Scotia](#), [Baffin Island](#), [Hudson Strait](#), [Labrador](#) and [Newfoundland](#).^{[11][2]} It has been recorded as an accidental introduction to [San Francisco, California](#), and as a potentially [invasive species](#) eradicated.^[18]

[edit] Uses

Ascophyllum nodosum is harvested for use in [alginates](#), [fertilisers](#) and for the manufacture of seaweed meal for animal and human consumption.^[19] It has long been used as an organic and mainstream fertilizer for many varieties of crops due to its combination of both [macronutrient](#), (eg. [N](#), [P](#), [K](#), [Ca](#), [Mg](#), [S](#)) and [micronutrients](#) (eg. [Mn](#), [Cu](#), [Fe](#), [Zn](#), etc). It also host to [cytokinins](#), [auxin](#)-like [gibberellins](#), [betaines](#), [mannitol](#), [organic acids](#), [polysaccharides](#), [amino acids](#), and proteins which are all very beneficial and widely used in agriculture.^[20] Ireland, Scotland and Norway have provided the world's principal alginate supply.^{[21][22]}

Ascophyllum nodosum is frequently used as packaging material for baitworm and lobster shipments from [New England](#) to various domestic and international locations.^[23] *Ascophyllum* itself has occasionally been introduced to California, and several species frequently found in baitworm shipments, including [Carcinus maenas](#) and [Littorina saxatilis](#), may have been introduced to the San Francisco Bay region this way.^[23]

[edit] Toxicological uses

Because the age of the different parts of *A. nodosum* can be identified by its shoots, *A. nodosum* has also been used to monitor concentrations of heavy metals in sea water. A [concentration factor](#) for zinc has been reported to be of the order 10 to the fourth.^{[24][25]}

[edit] References

This article incorporates CC-BY-2.5 text from the reference ^[23]

- [^] ^a ^b M. D. Guiry & Wendy Guiry (2006-11-23). "*Ascophyllum nodosum* (Linnaeus) Le Jolis". *AlgaeBase*. http://www.algaebase.org/speciesdetail.lasso?species_id=5&sk=0&from=results.

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External links

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Original description:  [Download PDF](#)

Type species

The type species (holotype) of the genus [Ascophyllum](#) is [Ascophylla laevigatum Stackhouse](#).

Status of name

This name is of an entity that is currently accepted taxonomically.

Basionym

[Fucus nodosus Linnaeus](#)

Type information

Type locality: Atlantic Ocean (Silva, Basson & Moe 1996: 895). Type: LINN “Hallands Väderösund” (Athanasiadis 1996: 217).

Origin of species name

Adjective (Latin), knotted, knobbly (Stearn 1973).

Homotypic Synonym(s)

[Fucus nodosus Linnaeus](#) 1753
[Fistularia nodosa \(Linnaeus\) Stackhouse](#) 1816
[Halicoccus nodosus \(Linnaeus\) Lyngbye](#) 1819
[Ozothallia nodosa \(Linnaeus\) Decaisne & Thuret](#) 1845
[Fucodium nodosum \(Linnaeus\) J.Agardh](#) 1848
[Ascophylla nodosa \(Linnaeus\) Kuntze](#) 1894

Heterotypic Synonym(s)

[Ascophyllum nodosum f. mackayi \(Turner\)](#)
[Fucus nodosus var. siliquatus Turner](#) 1802
[Fucus mackayi Turner](#) 1808
[Ascophylla laevigatum Stackhouse](#) 1809
[Fucus scorpioides Hornemann](#) 1813
[Fistularia mackayi \(Turner\) Stackhouse](#) 1816
[Chordaria scorpioides \(Hornemann\) Lyngbye](#) 1819
[Halidrys siliquosa var. minor Lyngbye](#) 1819
[Fucus nodosus var. denudatus C.Agardh](#) 1820
[Fucus nodosus var. evesiculosus J.Agardh](#) 1836
[Ozothallia vulgaris Decaisne & Thuret](#) 1845
[Halicoccus nodosus var. furcatus Areschoug](#) 1847
[Fucodium nodosum var. scorpioides \(Hornemann\) J.Agardh](#) 1848
[Ozothallia nodosa f. furcata \(Areschoug\) Kjellman](#) 1880
[Ascophyllum nodosum f. scorpioides Hauck](#) 1883
[Ascophyllum nodosum var. scorpioides \(Hauck\) Reinke](#) 1889
[Ascophyllum mackayi \(Turner\) Holmes & Batters](#) 1892
[Ascophyllum mackayi f. robertsonii Batters](#) 1892
[Ascophyllum robertsonii \(Batters\) Batters](#) 1892
[Ascophyllum nodosum var. furcatum \(Areschoug\) Reinke](#) 1892
[Ascophyllum nodosum var. typicum Reinke](#) 1892

[Ascophyllum nodosum](#) var. [minor](#) [Batters](#) 1902
[Ascophyllum nodosum](#) var. [siliquatum](#) ([Turner](#)) [Batters](#) 1902
[Ascophyllum nodosum](#) var. [mackayi](#) ([Turner](#)) [Cotton](#) 1912
[Ascophyllum nodosum](#) var. [lusitanicum](#) [Lami](#) 1939
[Ascophyllum nodosum](#) f. [denudatum](#) ([C.Agardh](#)) [Athanasiadis](#) 1996

General environment

This is a marine species.

Common names

(as *Ascophyllum nodosum* (Linnaeus) Le Jolis)

English: Knotted Wrack ([Dickinson 1963](#)).

(as *Ascophyllum mackayi* (Turner) Holmes & Batters)

English: Wrack ([Madlener 1977](#)).

Description

This is a brown seaweed that is closely related to *Fucus*. It forms a single bladders centrally in long, flattened strap-like fronds. The fronds hang downwards, draping sheltered intertidal rocks. Many fronds grow from the base and the plant generally regenerates new fronds from the base when one of the larger fronds are damaged. There is evidence that clumps can be over 400 years old and may be even older. *Ascophyllum* is currently confined to the North Atlantic basin, but plants have been found growing in San Francisco Bay, but the species does not persist there. The plants are used as packing for shellfish from the North Atlantic and when discarded may take hold.

Detailed distribution with sources

(as *Fucus nodosus* Linnaeus)

Ireland: Antrim ([Drummond 1837](#)), Wexford ([Tighe 1803](#)).

Europe: Ireland ([Tighe 1803](#), [Drummond 1837](#)).



Atlantic Islands: Canary Islands ([Price, John & Lawson 1978](#)).


(as *Ascophyllum nodosum* (Linnaeus) Le Jolis)

Arctic: Canada (Arctic) ([Taylor 1957](#), [Lee 1980](#)).

Ireland: Antrim ([Adams 1907](#), [Guiry 1978](#), [Morton 1994](#)), Clare ([Guiry 1978](#), [De Valéra & Cooke 1979](#)), Cork ([Renouf 1931](#), [Cullinane 1971](#), [Cullinane, McCarthy & Fletcher 1975](#), [Guiry 1978](#)), Derry ([Guiry 1978](#), [Morton 1994](#)), Donegal ([Guiry 1978](#), [Morton 2003](#)), Down ([Morton 1974](#), [Guiry 1978](#), [Morton 1994](#)), Dublin ([Guiry 1978](#)), Galway ([Guiry 1978](#)), Kerry ([Guiry 1978](#)), Leitrim ([Cullinane 1970](#), [Guiry 1978](#)), Limerick ([Cullinane 1969](#), [Guiry 1978](#)), Louth ([Synnott 1969](#), [Guiry 1978](#)), Mayo ([Cotton 1912](#), [Guiry 1978](#)), Sligo ([Cullinane 1970](#)), Waterford ([Guiry 1978](#)), Wexford ([Cotton 1913](#), [Parkes & Scannell 1969](#), [Norton 1970](#), [Guiry 1978](#)), Wicklow ([Guiry 1978](#)).

Europe: Baltic Sea ([Nielsen et al. 1995](#)), Britain ([Newton 1931](#), [Hardy & Guiry 2003](#), [Pavia et al 2003](#)), E. Greenland ([Pedersen 1976](#)), Faroes ([Irvine 1982](#), [Nielsen & Gunnarsson 2001](#)), France ([Feldmann 1954](#), [Connan et al 2006](#), [Dizerbo & Herpe 2007](#), [Loiseaux-de Goër & Noailles 2008](#)), Helgoland ([Bartsch & Kuhlenskamp 2000](#)), Iceland ([Caram & Jónsson 1972](#)), Ireland ([Adams 1907](#), [Cotton 1912](#), [Cotton 1913](#), [Cullinane 1969](#), [Cullinane 1971](#), [Guiry 1978](#), [De Valéra et al. 1979](#), [Morton 1994](#)), Netherlands ([Stegenga & Mol 1983](#), [Cho, Lee & Boo 2004](#)), Norway ([Rueness 1997](#)), Portugal ([De Mesquita Rodrigues 1963](#), [Ardre 1970](#), [Araujo et al. 2009](#), [Araújo, Bárbara & Sousa-Pinto in press](#)), Scandinavia ([Athanasiadis 1996](#)), Spain ([Miranda 1931](#), [Anadón 1983](#), [Pérez-Cirera 1989](#), [Granja, Cremades & Barbara 1992](#), [Bárbara & Cremades 1996](#), [Veiga, Cremades & Bárbara 1998](#), [Veiga Villar 1999](#), [Calvo & Bárbara 2002](#), [Valenzuela Miranda 2002](#), [Gorostiaga et al., 2004](#)), Spitsbergen ([Vinogradova 1995](#)), Sweden ([Kylin 1907](#), [Kylin 1947](#), [Pavia et al 2003](#)).

Atlantic Islands: Azores ([Neto 1994](#), [Tittley & Neto 1994](#), [Tittley, Neto & Parente 2009](#) ) , Bermuda ([Taylor 1957](#)), Canary Islands ([Price, John & Lawson 1978](#), [John et al. 2004](#)), Madeira ([Neto, Cravo & Haroun 2001](#) ) , [John et al. 2004](#)).

North America: California ([Miller et al. 2004](#) ) , [Miller et al. 2004](#)), Connecticut ([Van Patten 2009](#)), Labrador ([Taylor 1957](#)), Maine ([Mathieson et al. 2001](#)), New Hampshire ([Mathieson & Hehre 1986](#), [Mathieson & Dawes 2002](#), [Hofman et al. 2010](#)), New Jersey ([Taylor 1957](#)), Newfoundland ([Taylor 1957](#)), North Carolina ([Schneider & Searles 1991](#)), Nova Scotia ([Kim et al 2006](#), [Garbary et al 2006](#), [Longtin et al. 2009](#)), Virginia ([Humm 1979](#)).

South America: Brazil ([Taylor 1930](#) ) , [Taylor 1960](#)).

(as *Ascophyllum nodosum* f. *scorpioides* Hauck)

Europe: Sweden ([Kylin 1947](#)).

North America: Maine ([Taylor 1957](#), [Mathieson et al. 2001](#)), Maritime Provinces ([Taylor 1957](#)), Massachusetts ([Taylor 1957](#)), New Hampshire ([Taylor 1957](#), [Mathieson & Hehre 1986](#)), New Jersey ([Taylor 1957](#)), Virginia ([Taylor 1957](#)).

(as *Ascophyllum nodosum* var. *scorpioides* (Hauck) Reinke)

Europe: Britain ([Newton 1931](#)), Ireland ([Newton 1931](#)).

(as *Ascophyllum mackayi* (Turner) Holmes & Batters)

Ireland: Galway ([Batters 1892](#)).

Europe: Britain ([Newton 1931](#)).

North America: Connecticut ([Taylor 1957](#)), Massachusetts ([Taylor 1957](#)).

(as *Ascophyllum mackayi* f. *robertsonii* Batters)

Europe: Britain ([Newton 1931](#)).

(as *Ascophyllum nodosum* var. *minor* Batters)

Ireland: Antrim ([Morton 1994](#)).

Europe: Britain ([Newton 1931](#)), Ireland ([Morton 1994](#)).

(as *Ascophyllum nodosum* var. *siliquatum* (Turner) Batters)

Europe: Britain ([Newton 1931](#)).

(as *Ascophyllum nodosum* var. *mackayi* (Turner) Cotton)

Ireland: Galway ([Cotton 1912](#)).

Europe: Ireland ([Cotton 1912](#)).

(as *Ascophyllum nodosum* var. *lusitanicum* Lami)

Europe: Portugal ([De Mesquita Rodrigues 1963](#)).

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SAG Cultures

No records have been found on the [SAG](#) site.

NCBI Nucleotide Sequences

No sequences have been found on the [NCBI](#) site.

Created: 30 March 1996 by M.D. Guiry

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Accesses: This record has been accessed by users 41819 times since it was created.

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Algaebase taxon LSID: urn:lsid:algaebase.org:taxname:5222

Bladderwrack <http://www.nutriherb.net/bladderwrack.html>

Health and Wellness Library:



Botanical Name *Fucus Vesiculosus*

About Bladderwrack

Bladderwrack, or kelp, is useful in the treatment of underactive thyroid glands. People who are overweight due to thyroid trouble may benefit from this herb by reducing their weight. The iodine in the kelp helps maintain a healthy thyroid, and the nutrients and oxygen increase the body's ability to burn fat when exercising. Bladderwrack is rich in the constituents algin, mannitol, carotene, zeaxanthin,

iodine, fucoidan, and bromine. It is reputed to have a beneficial effect for relief of rheumatism and rheumatoid arthritis (internally and externally applied to inflamed joints).

Nutritional Role of Bladderwrack

Bladderwrack contains three main constituents: iodine, alginic acid, and fucoidan. The iodine in Bladderwrack helps those people deficient in this trace mineral to regulate and improve thyroid function, thus it is beneficial for hypothyroidism and goiter. It works as an anti-inflammatory and possesses anti-rheumatic properties to relieve arthritis and rheumatism. Bladderwrack's anti-bacterial properties help ward off bacteria and viruses. The alginic acid constituent, a type of dietary fiber, is useful in relieving constipation, diarrhea, and heartburn. The fucoidan constituent, another type of fiber, contributes to lowering cholesterol and glucose levels.

Traditional Uses of Bladderwrack

- For thyroid gland and metabolism
- For hypothyroidism and goiter
- For rheumatism and rheumatoid arthritis
- For irritated and inflamed body tissues
- For weight loss related to thyroid problems
- For fat burning during exercise
- For stamina
- For cholesterol and blood glucose levels
- For dietary fiber
- For anti-bacterial properties

Research on the Historical Usage Guidelines of Bladderwrack

There are no known toxicities. It has not been determined whether bladderwrack is safe to use during pregnancy and breastfeeding. People who are allergic to iodine may need to avoid bladderwrack.

Bladderwrack Facts for Informational Purposes Only

Readers should not use this information for self-diagnosis or self-treatment, but should always consult a medical professional regarding any medical problems and before undertaking any major dietary changes. This information is not meant to be substituted for medical advice.

http://allnutritionals.com/natural-products/seaweed-kelp-bladderwrack-fucus-vesiculosus.php#P25_3954

Adults (18 years and older)

General use (by mouth) : Soft capsules (alcohol extract) in doses of 200 to 600 milligrams daily have been used. Tablets have also been used, initially taken 3 times per day and gradually increased to 24 tablets per day. 16 grams of bruised plant mixed with one pint of water has been used, administered in 2 fluid ounce doses 3 times per day, or an alcoholic liquid extract in a dose of 4 to 8 milliliters before meals.

Patch : Bladderwrack and seaweed patches are sold commercially as weight loss products, although there are no commonly accepted or tested doses.

Children (under 18 years old)

There is not enough scientific evidence to recommend safe use of bladderwrack in children. Because of the iodine content and potential for contamination with heavy metals, it may be inadvisable for use in children.

<http://www.nlm.nih.gov/medlineplus/druginfo/natural/726.html>.

What is it? Bladderwrack is a type of seaweed. People use the whole plant to make medicine. Bladderwrack is used for many conditions, but, so far, there isn't enough scientific evidence to determine whether or not it is effective for any of them. It's also important to note that it's not safe to take bladderwrack by mouth.

Bladderwrack is used for thyroid disorders including underactive thyroid (myxedema), over-sized thyroid gland (goiter), and iodine deficiency. It is also used for obesity, arthritis, joint pain, "hardening of the arteries" (arteriosclerosis), digestive disorders, heartburn, "blood cleansing," constipation, bronchitis, emphysema, urinary tract disorders, and anxiety. Other uses include boosting the immune system and increasing energy. Some people also apply bladderwrack to the skin for skin diseases, burns, aging skin, and insect bites.

Don't confuse bladderwrack with bladderwort.

How effective is it? *Natural Medicines Comprehensive Database* rates effectiveness based on scientific evidence according to the following scale: Effective, Likely Effective, Possibly Effective, Possibly Ineffective, Likely Ineffective, Ineffective, and Insufficient Evidence to Rate.

The effectiveness ratings for BLADDERWRACK are as follows:

Insufficient evidence to rate effectiveness for...

- **Obesity.** Early research suggests that bladderwrack, used along with lecithin and vitamins, doesn't help people lose weight and keep it off.
- **Thyroid problems, including an over-sized thyroid gland (goiter).**
- **Iodine deficiency.**
- **Arthritis.**
- **Achy joints (rheumatism).**
- **"Hardening of the arteries" (arteriosclerosis).**
- **Digestive problems.**
- **"Blood cleansing".**
- **Constipation.**
- **Other conditions.**

More evidence is needed to rate bladderwrack for these uses.

How does it work?

Bladderwrack, like many sea plants, contains varying amounts of iodine, which is used to prevent or treat some thyroid disorders. Bladderwrack products may contain varying amounts of iodine, which makes it an inconsistent source of iodine. Bladderwrack also contains algin, which can act as a laxative to help the stool pass through the bowels.

Are there safety concerns?

Bladderwrack is **POSSIBLY UNSAFE**. It may contain high concentrations of iodine, which could cause or worsen some thyroid problems. Prolonged, high intake of dietary iodine is linked with goiter and increased risk of thyroid cancer. Treatment of thyroid problems should not be attempted without medical supervision.

Like other sea plants, bladderwrack can concentrate toxic heavy metals, such as arsenic, from the water in which it lives.

Special precautions & warnings:

Pregnancy and breast-feeding: Bladderwrack is **LIKELY UNSAFE** during pregnancy and breast-feeding. Don't use it.

Thyroid problems known as hyperthyroidism (too much thyroid hormone), or hypothyroidism (too little thyroid hormone): Bladderwrack contains significant amounts of iodine, which might make hyperthyroidism and hypothyroidism worse. Don't use it.

Infertility: Preliminary research suggests that taking bladderwrack might make it harder for women to get pregnant.

Iodine allergy: Bladderwrack contains significant amounts of iodine, which could cause an allergic reaction in sensitive people. Don't use it.

Surgery: Bladderwrack might slow blood clotting. There is a concern that it might cause extra bleeding during and after surgery. Stop taking bladderwrack at least 2 weeks before surgery.

Are there interactions with medications?

Moderate

Be cautious with this combination.

Medications for an overactive thyroid (Antithyroid drugs)

Bladderwrack can contain significant amounts of iodine. Iodine can affect the thyroid. Taking iodine along with medications for an overactive thyroid might decrease the thyroid too much. Do not take bladderwrack if you are taking medications for an overactive thyroid.

Some of these medications include methenamine mandelate (Methimazole), methimazole (Tapazole), potassium iodide (Thyro-Block), and others.

Medications that slow blood clotting (Anticoagulant / Antiplatelet drugs)

Bladderwrack might slow blood clotting. Taking bladderwrack along with medications that also slow clotting might increase the chances of bruising and bleeding.

Some medications that slow blood clotting include aspirin, clopidogrel (Plavix), diclofenac (Voltaren, Cataflam, others), ibuprofen (Advil, Motrin, others), naproxen (Anaprox, Naprosyn, others), dalteparin (Fragmin), enoxaparin (Lovenox), heparin, warfarin (Coumadin), and others.

Are there interactions with herbs and supplements?

Herbs and supplements that might slow blood clotting

Bladderwrack might slow blood clotting. Taking bladderwrack along with herbs that also slow clotting might increase the chances of bruising and bleeding. These herbs include angelica, clove, danshen, fenugreek, feverfew, garlic, ginger, ginkgo, Panax ginseng, poplar, red clover, turmeric, and others.

Are there interactions with foods?

There are no known interactions with foods.

What dose is used?

The appropriate dose of bladderwrack depends on several factors such as the user's age, health, and several other conditions. At this time there is not enough scientific information to determine an appropriate range of doses for bladderwrack. Keep in mind that natural products are not always necessarily safe and dosages can be important. Be sure to follow relevant directions on product labels and consult your pharmacist or physician or other healthcare professional before using.

Other names

Alga Noruega o Nudosa, Ascophyllum nodosum, Atlantic Kelp, Black Tang, Bladder Fucus, Bladder Wrack, Blasentang, Cutweed, Fucus, Fucus vesiculosus, Kelp, Kelpware, Kelp-Ware, Knotted Wrack, Marine Oak, Meereiche, Norwegian Seaweed, Quercus Marina, Rockweed, Rockwrack, Schweintang, Sea Kelp, Seawrack, Tang, Varech.

Methodology

To learn more about how this article was written, please see the *Natural Medicines Comprehensive Database* [methodology](http://www.nlm.nih.gov/medlineplus/druginfo/natural/methodology.html).methodology (<http://www.nlm.nih.gov/medlineplus/druginfo/natural/methodology.html>).

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To see all references for the Bladderwrack page, please go to <http://www.nlm.nih.gov/medlineplus/druginfo/natural/726.html>.

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Last reviewed - 11/18/2010 <http://www.nlm.nih.gov/medlineplus/druginfo/natural/726.html>

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<http://www.modifilan-seaweed-extract.com/Usage.aspx?keyword=>

Recommended Usage: Recommended average dosage (Indications) is 2 to 3 grams (4 - 6 capsules) daily with glass of water.

Chelation therapy - Heavy Metal, Radiation, Free Radicals Detoxification

6 - 12 capsules(based on your weight and tolerance of the product: 100 lbs - 6-8 capsules, ..., 200 lbs - 12 capsules) per day for up to 6 months.

Because the amount of heavy metals in each person is different, it is recommended to have a hair analysis to see if the heavy metals have been effectively removed.

It is a good idea to give the body a break once a month for 2-4 days during the detoxification period.

General Health and Prophylactic Purposes

Do chelation therapy first, then you could reduce it to 2 - 4 capsules daily.

Cancer, High Blood sugar, Cardiovascular Deseases, High Cholesterol, Poor Thyroid Function

8 - 10 capsules* per day (4 to 5 grams) for period of 3 months. If you observe improvement in health conditions, lesser dosage may be taken for maintenance, such as 2 to 4 capsules per day.

Weight loss and weight control

Do chelation therapy first, then you could reduce it to 6 capsules daily.

Note: Since modifilan is natural nutritional supplement and not a drug, these recommended dosages are approximate, it is important for each person to find his or her own ideal dosage.

IMPORTANT:

* Drink plenty of water or light juice, when take modifilan. At least 1 full glass of liquid is recommended for each 4 capsules of extract.

* Modifilan is best taken on an empty stomach, such as upon rising in the morning and in between meals with plenty of water, as it is highly concentrated product.

It is not recommended to take Modifilan before bedtime, as most people report an increased energy level, which could inhibit sleep. All other questions regarding dosage of MODIFILAN will be gladly answered if you contact us directly. You could send us questions through Contact Us page.

These dosage recommendations are based on scientific research and clinical studies on subjects, who volunteered to take MODIFILAN as an additive to their regular diet.

*One capsule 500 mg

You also want to eat foods or supplements high in **calcium** and **potassium** because they also aid in the excretion of radioactive particles, particularly cesium-137.

Potassium has a chemical composition similar to Cesium-137 (a nuclear byproduct often ingested via fruits and vegetables grown in contaminated soil). Just as with iodine, because of this similarity, your body will tend to absorb any available Cesium-137 if there's a potassium shortage in the diet whereas when the body is fed a good supply of potassium, it will be much less likely to absorb the radioactive particles.

Strontium-90 also competes with calcium and lowers vitamin D, so taking extra calcium and vitamin D during radiation exposure can help prevent radioactive strontium from being stored in your bones. The calcium will help alkalize your body which will be useful for healing purposes.

Natural **iodine**, of course, helps prevent the uptake of iodine-131 while **iron** inhibits the absorption of plutonium-238 and plutonium-239, **vitamin B-12** inhibits cobalt-60 uptake (used in nuclear medicine), **sulfur** is preventative for sulfur-35 (a product of reactors) incorporation by the body, and **zinc** inhibits zinc-65 uptake.

Getting a ready supply of highly absorbable minerals is essential for radiation therapy, and is something the algae and yeasts supply perfectly. Sorenson (JRJ Sorenson, "Essential metalloelement metabolism and radiation protection and recovery," *Radiat. Res.*, 132, 19-29, 1992.) has reviewed the field of radioprotection by metals and minerals and states,

"Understanding the metabolism of essential metalloelements and its role in responding to radiation injury as mediated by immunomodulating cytokines offers a new approach to protection against hematopoietic and gastrointestinal syndromes and perhaps cardiovascular and central nervous system syndromes. Copper, iron, manganese, and zinc compounds have radioprotective activity..."

Hence, many minerals can help with radioprotection and they certainly help repair the body after radiation exposure.

By L. Gordin, M.D.
Cambridge, MA

Modifilan is a concentrated extract of the brown seaweed *Laminaria japonica*. This seaweed is gathered in the clean waters of the northwestern Pacific Ocean. Forty pounds of raw *Laminaria japonica* is needed to make just one pound of Modifilan. This unique patented technology "semidigests" the tough outer layer of seaweed fibers exposing, concentrating and making much more bioavailable the macro-and micronutrient-dense central vein of the *Laminaria*.

Although the nutritional and medicinal powers of seaweeds have been known for thousands of years the scientific basis of their health benefits has been established only recently.

One of the most impressive aspects of Modifilan that sets it apart from other types of seaweed products is its very high content of soluble polysaccharides like Fucoidan, laminarin and alginate. The former compound is particularly rich in such simple sugars as glucuronic acid, mannose and fucose that give *Laminaria* its distinctive taste.

The ongoing research into Fucoidan has conclusively demonstrated its ability to induce cancer cell apoptosis (programmed cell death) in leukemia, stomach and colon cancer cell lines. This biological data support epidemiological observations that *Laminaria* is an important factor contributing to the relatively low breast cancer rates reported in Japan.

The technology involved in processing *Laminaria japonica* preserves and at the same time concentrates this vulnerable thermolabile substance thus making Modifilan one of the richest sources of cancer-fighting Fucoidan.

Another polysaccharide concentrated in Modifilan that may have anti-cancer properties is laminarin. It is known that tumor formation and growth require a highly charged extra-cellular matrix. Solid tumors provoke ongoing high-level fibrin leakage from surrounding capillaries. This fibrin clot gets invaded by various cells recruited by solid tumors including fibroblasts and endothelial cells. The former cells lay down a heavily charged matrix throughout the tumor and the later cells participate in tumor angiogenesis (vascularization). Angiogenesis is a prerequisite for tumor expansion and metastasis. It has been shown that laminarin sulfate inhibit the binding of basic fibroblast growth factor (BFGF) to an extra-cellular matrix leading to inhibition of fibrin clot invasion by tumor-recruited fibroblasts and endothelial cells suggesting a novel approach to tumor

therapy based on blocking angiogenesis.

Cancer metastasis involves the tumor cell adhesion to host tissue basement membrane followed by tissue invasion facilitated by tumor cell surface (urokinase-type plasminogen activator) associated plasminogen activation. Fucoidan interferes with cancer cells metastasis (anti-metastatic activity) by inhibition of physical interaction between the tumor cells and basement membrane as well as suppression of the proteolytic cascade of plasminogen activation.

Interaction and organization of cells and tissue in general and tumor and host cells in particular may be mediated by the interactions between cell membrane polysaccharides and the corresponding protein receptor. Fucoidan, a sulfated fucopolysaccharide, inhibits the adhesion process (cell-cell interaction) by blocking lectin-like adhesion molecules (glycoproteins) on cell surfaces and therefore interfering with tumor cell colonization (metastasis). Another mechanism of antiproliferative (anti-tumor) properties of Fucoidan was shown in vitro and in vivo on a cell line derived from a nonsmall-cell human bronchopulmonary carcinoma (particularly chemoresistant tumor). Fucoidan exerted antiproliferative activity with a block observed in the G1 phase of the cell cycle.

It has also been demonstrated that Fucoidan acts as a so-called activator of the reticulo-endothelial system, specifically as an enhancer of phagocytosis. This suggests another aspect of antitumor activity of Fucoidan related to the activation of macrophage-mediated tumor cell killing.

There are also non-polysaccharide fractions from Laminaria that have been found to have a significant cancer-preventative anti-mutagenic (anti-DNA damage) activity against typical genotoxic substances.

Another promising use of the sulfated polysaccharides Fucoidan and laminarin is in the prevention and treatment of cardiovascular disease. Several mechanisms are involved: the inhibition of smooth muscle cell proliferation (monoclonal hyperplasia) which is an important step in atherogenesis; activation of enzymes involved in the beta-oxidation of fatty acids which can be useful in the prevention and treatment of hyperlipidemia. Laminarin has been shown to have a hypotensive effect. It also exhibits 30% of the anticoagulant activity of heparin.

All of these properties of sulfated polysaccharides make Modifilan clinically applicable in the prevention and treatment of coronary heart disease, cerebrovascular disease, atherosclerosis, cancerogenesis and cancer metastasis.

Another extremely important area of Modifilan application is in the environmental medicine. Polysaccharide laminarin has been shown in four animal species (mice, guinea pigs, dogs, and monkeys) to prevent acute radiation sickness and death (about LD90) when administered within 24 hours after radiation exposure. This research suggests that the brown seaweed Laminaria can be clinically useful in the treatment and prevention of the adverse effects of ionizing radiation.

The non-digestible polysaccharide alginate that comprises 50% of Modifilan's total dry weight has the unique ability of binding heavy metals and radioactive substances to its own molecules. As the alginate is non-digestible it is excreted from the body together with toxic compounds. This is particularly important for cadmium and mercury, as these metals are found at dangerously high levels in air, water and food. Alginate can also remove isotopes that have previously been absorbed by the human body from the environment. Even small amounts of radioactive pollution will expose surrounding cells to harmful radioactive emission. The way alginate facilitates the excretion of toxic substances that find their way into the body from the environment can be shown using, as an example, the elimination of radioactive strontium:

Sr 2+ (food)

Sr 2+ (in GI tract) + alginate = strontium alginate feces

Sr 2+ (blood)

Sr 2+ (bones)

A percentage of Strontium molecules stored in the bone structure (or any other toxic substance stored in the tissue) is constantly released and is traveling with the blood stream. As the blood feeds the saliva and bile, part of the released strontium or other toxic metal ends up in the large intestine. Most of the liquid in the large intestine is reabsorbed by the body including the radioactive isotopes and heavy metals, which are redeposited back into the tissue. Alginate can break this process, as toxic substances are bound to the alginate molecules and released from the body with feces. Alginate binds to all heavy metals including lead, mercury, cadmium, cobalt, copper and radium.

Modifilan should be consumed over at least a four-month period to expedite removal of toxic substances stored in the body as a result of previous exposures.

Another interesting potential application of Modifilan as one of the best sources of Fucoidan is for inflammatory conditions of the alimentary tract.

The inflammation process involves elevated synthesis of the proinflammatory mediators like adhesion molecules, white cell infiltration of gastrointestinal mucosa and altered mucosal integrity. Therapeutic use of heparin has produced clinical remission in the majority of patients with inflammatory bowel disorder. One of the mechanisms involved is restoration of the fibroblast growth factor activity that stimulates repair of the epithelium. Since Fucoidan shares many properties with heparin including cell surface activity one can expect similar therapeutic benefit with use of Fucoidan.

Another mechanism of the beneficial effect of heparin, heparan sulphate and potentially Fucoidan is their mucosal-protective properties as glycosaminoglycans. Gastrointestinal inflammation may cause alteration in the protective mucosal layer of glycosaminoglycans and may cause substances like heparin and Fucoidan to become "conditionally essential" nutrients suitable for oral administration because they can be absorbed across the GI mucosa.

Spirulina – After the Chernobyl incident in 1986, the Institute of Radiation Medicine in Minsk proved that children experienced enhanced immune systems, T-cell counts and reduced radioactivity on this protocol: 5 grams of spirulina a day for 45 days. Spirulina can be found in most health food stores.

Chlorella - It is one of the most widely studied of the algae and has been described as having the highest chlorophyll content. Animal studies indicate a chlorophyll rich diet increases the survival of experimental animals after lethal doses of radiation. Studies dating back to the 1950's, including a US Army study, confirm these findings. According Roy Upton, director of the American Herbal Pharmacopeia, the use of chlorella was first developed by the Japanese as an antidote and treatment against atomic radiation. Chlorella and liquid chlorophyll can also be found in most health food stores.

Brassica vegetables and high beta carotene vegetables – Cancer researchers have found that all the brassica family plants protect your cells from the damaging effects of radiation. Beta-carotene has also been researched and found to have radio-protective effects. A study conducted on over 700 children exposed to the Chernobyl radiation found that diets high in carotenes significantly reduced DNA damage in humans exposed to radiation. Natural beta-carotene protects against the lipid oxidation and acts as a fatty acid antioxidant radio-protector. Brassica vegetables include broccoli, brussels sprouts, cabbage, cauliflower, swedes, turnips, broccoli raab, collards, cress, kale, kohlrabi, mustard, and bok choy. Beta-carotene can be found in concentrated amounts in foods such as sweet potatoes, carrots, kale, spinach, turnip greens, winter squash, collard greens, cilantro, fresh thyme, cantaloupe, romaine lettuce and broccoli.

Beans and lentils – These foods have high nucleotide concentrations. Nucleotides are the building blocks that make up RNA and DNA. Nucleotides also carry out several critical functions needed for cell replication, as well as neutralizing toxins, increasing cellular metabolism, improving the response and efficiency of the immune system, enhancing the effects of antioxidants and increase the body's ability to heal and repair. Other foods high in nucleotides include spirulina, chlorella, algae, yeast, sardines, liver, anchovies and mackerel.

Potassium, magnesium, calcium and mineral rich foods – Cesium (one of the radioactive elements released from the nuclear reactor) will be treated by the body as if it were potassium, so a potassium deficiency would tend to make one more receptive to radioactive hazards posed by cesium, says Ingrid Naiman. Potassium regulation is affected by magnesium and magnesium and calcium need to be in proper balance. Calcium significantly decreases the amount of Strontium 90 absorbed by bone. Foods high in potassium include apricots, avocado, bananas, cantaloupe, honeydew, kiwi, lima beans, milk, oranges, potatoes, prunes, spinach, tomatoes and winter squash. Greens like spinach and swiss chard, nuts and seeds such as pumpkin, sunflower and sesame, and beans like black and navy, are good sources of dietary magnesium. Most of the foods above also contain calcium, especially the dark green leafy vegetables, along with cheese, fish and yogurt.

March 13th, 2011

Protect yourself from radiation poisoning:

Many people are wondering what they could do to protect themselves and their loved ones in the event that dangerous levels of radiation were to migrate into their local areas.

There are two types of radiation, according to Lita Lee, author of Radiation Protection Manual. They are ionizing and non-ionizing radiation. The ionizing radiation is more damaging because it is of a higher energy than non-ionizing radiation and produces charged particles called ions, either negative ions (the good “guys”) or positive ions (the bad ones). Ionizing radiation is produced from nuclear bombs, nuclear reactors, medical and dental x-rays, and is the type of radiation used to irradiate food. The non-ionizing radiation includes electromagnetic radiation produced by electric current, radio waves, microwave ovens, radar stations, television (cathode ray tube), video display terminals (VDT's) computers, high voltage lines, infrared and fluorescent lights, and sunlamps (e.g. tanning booths which emit ultraviolet light).

#1- Potassium Iodide (KI) – Many are reading about potassium iodide being handed out in Japan because of radiation levels. Potassium iodide may protect just the thyroid gland against exposure to radioactive iodine that occurs when radiation levels increase. KI will probably not help with radiation damage in other parts of the body.

The [FDA](#) has approved two different forms of **KI** – tablets and liquid – that people can take by mouth after a nuclear radiation emergency. Tablets come in two strengths, 130 milligram (mg) and 65 mg. The tablets are scored so they may be cut into smaller pieces for lower doses. Each milliliter (mL) of the oral liquid solution contains 65 mg of KI.

According to the FDA, the following doses are appropriate to take after internal contamination with (or likely internal contamination with) radioactive iodine:

- Adults should take 130 mg (one 130 mg tablet OR two 65 mg tablets OR two mL of solution).
- Women who are breastfeeding should take the adult dose of 130 mg.
- Children between 3 and 18 years of age should take 65 mg (one 65 mg tablet OR 1 mL of solution). Children who are adult size (greater than or equal to 150 pounds) should take the full adult dose, regardless of their age.
- Infants and children between 1 month and 3 years of age should take 32 mg (½ of a 65 mg tablet OR ½ mL of solution). This dose is for both nursing and non-nursing infants and children.
- Newborns from birth to 1 month of age should be given 16 mg (¼ of a 65 mg tablet or ¼ mL of solution). This dose is for both nursing and non-nursing newborn infants.

The protective effects of a dose of KI is about 24 hours. KI is available without a prescription, and a pharmacist can sell you KI brands that have been approved by the FDA

#2- Glutathione and a potentially protective combination!

We know radiation exposure causes approximately 3% of all cancers. This fact has been studied extensively. When you are exposed to radiation a very reactive type of free radical is formed called a “hydroxyl radical”. Studies have shown glutathione’s (GSH) detoxification abilities play a key role in neutralizing hydroxyl radicals and cancer specialists are now raising glutathione (GSH) levels in patients who are undergoing radiation therapy as part of their cancer treatment. Detoxification benefits from boosted glutathione (GSH) levels and helps cancer patients better tolerate their treatment. Studies have also been done around the world, from Switzerland to Spain to India to Germany, on the effect of glutathione (GSH) on radiation damage. Low levels of glutathione (GSH) were connected with an increased risk of developing cancer from radiation exposure. ***Patients undergoing cancer treatment experienced stronger side effects and greater injury from radiation therapy when they had low glutathione (GSH) levels.***

The immune system, have been shown to be better able to withstand radiation therapy when cancer specialists raised glutathione (GSH) prior to treatment. The implication here is... glutathione (GSH) does and will, to a greater degree, play a major role in the treatment of cancer by using detoxification to reduce the damaging effects of radiation.

At the time of the **atomic bombing**, Tatsuichiro Akizuki, M.D. was Director of the Department of Internal Medicine at St. Francis’s Hospital in Nagasaki and he fed his staff and patients a strict diet of brown rice, miso and tamari soy soup, wakame, kombu and other

seaweed, Hokkaido pumpkin, and sea salt. He also prohibited the consumption of sugar and sweets since they suppress the immune system. **By imposing this diet on his staff and patients, no one succumbed to radiation poisoning** whereas the occupants of hospitals located much further away from the blast incident suffered severe radiation fatalities. Much of this positive result has to do with the fact that the sea vegetables contain substances that bind radioactive particles and escort them out of the body. This is why seaweed sales usually skyrocket after radiation disasters, and why various seaweeds and algae are typically used to treat radiation victims. <http://www.shirleys-wellness-cafe.com/detox.htm>

In **Chernobyl**, for instance, spirulina was used to help save many children from radiation poisoning. By taking 5 grams of spirulina a day for 45 days, the Institute of Radiation Medicine in Minsk even proved that children on this protocol experienced enhanced immune systems, T-cell counts and reduced radioactivity. Israeli scientists have since treated Chernobyl children with doses of natural beta carotene from Dunaliella [algae](#) and proved that it helped normalize their blood chemistry. Chlorella algae, a known immune system builder and heavy metal detoxifier, has also shown radioprotective effects. Because they bind heavy metals, algae should therefore be consumed after exposure to any type of radioactive contamination. (Note: Marine phytoplankton is also a powerful detoxifier and nourishing product.

In 1968 a group of Canadian researchers at McGill University of Montreal, headed by Dr. Stanley Skoryna, actually set out to devise a method to counteract the effects of **nuclear fallout**. The key finding from their studies was that sea vegetables contained a polysaccharide substance, called sodium alginate, which selectively bound radioactive strontium and eliminated it from the body.

Sodium alginate is found in many seaweeds, especially kelp, and since that time the Russians have been seriously researching the use of their own kelps from Vladivostok, from which they have isolated the polysaccharide U-Fucoidan, which is another radioactive detoxifier. Because **miso soup** was so effective in helping prevent radiation sickness, the Japanese have also done research identifying the presence of an active ingredient called zibicolin, discovered in 1972, which acts as a binding agent to also detoxify and eliminate radioactive elements (such as strontium) and other pollutants from the body.

The kelps and algae aren't the only natural foods with radio-detoxifying effects. In terms of fluids to drink, black and green tea have shown "radioprotective effects" whether consumed either before or after exposure to radiation. This anti-radiation effect was observed in several Japanese studies, and studies from China also suggest that the ingredients in tea are radioactive antagonists.

In short, **after any sort of radioactive exposure you want to be eating seaweeds and algae along with almost any type of commercial heavy metal chelating formula to bind radioactive particles and help escort them out of the body**. Whether you're worried about depleted uranium, plutonium or other isotopes, this is the wise thing to do which can possibly help, and certainly won't hurt. Many nutritional supplements have been developed for the purpose of detoxifying heavy metals, most of which contain the algae and plant fibers and other binding substances. Basically, an anti-radiation diet should focus on the following foods:

- Miso soup
- Spirulina, chlorella and the algae (kelp, etc.)
- Brassica vegetables and high beta carotene vegetables
- Beans and lentils
- Potassium, calcium and mineral rich foods
- High nucleotide content foods to assist in cellular repair including spirulina, chlorella, algae, yeast, sardines liver, anchovies and mackerel
- cod liver oil and olive oil
- Avoid sugars and sweets and wheat
- A good multivitamin/multimineral supplement

Yet another benefit of the sea vegetables rarely discussed is their high mineral content, which is a bonus in the case of radioactive exposure. Consuming **natural iodine**, such as in the seaweeds, helps prevent the uptake of iodine-131 while iron inhibits the absorption of plutonium-238 and plutonium-239. Vitamin B-12 inhibits cobalt-60 uptake (used in nuclear medicine), zinc inhibits zinc-65 uptake and sulfur is preventative for sulfur-35 (a product of nuclear reactors) incorporation by the body.

Since nuclear workers are potentially exposed to radioactive sulfur, this means that workers in the atomic power industry need a higher content of sulfur in their diet. MSM supplements provide a source of dietary sulfur, but supplements such as cysteine, lipoic acid and glutathione serve double-duty in this area because they help detoxify the body and attack all sorts of other health problems as well.

The above are options that may be protective without being dangerous. It's important to understand that some of these options have not been studied in large, well organized trials but come about as a result of the reported experience of countries, scientists and physicians who had to deal with dangerous levels of radiation and their effects on the populations exposed to them.

With the people of Japan in our thoughts and prayers,

Curt Hendrix, M.S. C.C.N. C.N.S

Commonly referred to as seaweed, kelp is a well-known tonic in modern herbology. Until recently, this algae was consumed almost solely by the Japanese. Studies have, in fact, proven that there is a significant correlation between the Japanese intake of kelp and the country's dramatically lower rates of **breast cancer, obesity, heart disease, respiratory disease, rheumatism, arthritis, high blood pressure, thyroid deficiency, infectious disease, constipation, and other gastrointestinal ailments.**

In fact, by the 18th century doctors had already noticed that people that lived along the Atlantic coast rarely developed enlarged thyroid glands, known as goiters. They realized that this phenomenon was due to the large intake of kelp by the people on the coast.

The Indians also learned the value of consuming kelp. They also used it so they would not get "big necks" (goiters) like those who suffered from a lack of iodine. Some of the Indians, especially those living on or near the coasts, also found kelp to be beneficial in treating burns and scalds. The herb was also used to combat obesity and as a blood purifier and alterative (a medicine that gradually changes a condition and brings back health).

Kelp is a significant source of iodine and has therefore been used for hundreds of years in the treatment of enlarged thyroid glands. In the 1860's, physicians in Britain and France noticed that people who consumed iodine seemed to lose weight more easily than most people do. They discovered that iodine stimulates the thyroid, which in turn boosts the body's metabolic rate. As a result, the body is able to burn calories more quickly.

Kelp is useful in our technologically advanced world because it is beneficial in treating radiation exposure and heavy metal toxicity. Kelp contains a chemical called sodium alginate, which prevents the absorption of radioactive strontium 90. Strontium 90 is a by-product of nuclear explosions and nuclear power and weapons facilities and has been linked to a number of cancers including leukemia, bone cancer, and Hodgkin's disease. One study has shown that alginate supplements can reduce strontium 90 by as much as 83%. Sodium alginate helps to prevent the absorption of newly ingested metals. It is therefore a good supplement for anyone who works in a nuclear facility, lives near one, or is otherwise exposed to heavy metals.

Kelp is a contributor to the health of all the major body organs and glands. It also contributes to the health of the cardiovascular system by producing essential nutrients, preventing infectious and inflammatory diseases through its antibiotic principles, and by treating hypertension.

Studies have shown that this ocean-herb, known as the fisherman's friend, may aid in reducing cholesterol and blood pressure. It is however, high in sodium, which may raise the blood pressure of some individuals who are sensitive to salt.

Herbalists primarily recommend kelp as a natural source of minerals. It contains almost 30 minerals including calcium, iron, potassium, magnesium, and sulfur. This mineral rich herb is also rich in B-complex vitamins and is a source of

vitamins A, C, and E. In addition; kelp contains an anti-sterility vitamin and an anti-hemorrhage vitamin. For these reasons, kelp is often employed as a mineral supplement by many herbalists today.

Sources:

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Foods, Herbs and Supplements That Are Radioprotective Miso Soup Several Times A Week

Remember the Nagasaki **Dr. Shinichiro Akizuki**, who saved his St. Francis hospital staff and patients from acute radiation sickness being only one mile from the atomic blast? Here's some further information about that story.

Another hospital that was farther away from the blast site (University Hospital) had 3,000 patients who suffered greatly from leukemia and disfiguring radiation burns while Dr. Akizuki's hospital, which was closer to the blast site, had almost no individuals who suffered from radiation poisoning.

The difference was that he fed his patients and workers brown rice, miso soup, vegetables and seaweed every day whereas University Hospital fed its patients sugar, white rice, and refined white flour products.

By 1972, Dr. Akizuki and his co-workers still had not experienced any side effects from the radiation exposure ... whereas others who had been farther away from the blast had the opposite experience.

Well, one food he relied upon was **miso broth**, which is the classic food for the prevention of radiation damage and which he maintains was key to helping his crew.

The evidence that miso soup is key to fighting radiation exposure also comes to use from the Soviet experience. For instance, since the 1950s the Soviet weapons factories had been dumping wastes into Karachar Lake in **Chelyabinsk**, which is an industrial city east of Moscow. Many of the local residents accordingly started suffering from radiation symptoms and cancer.

In 1985 the medical doctors changed their approach to patients suffering from leukemia and other disorders associated with exposure to nuclear radiation and began incorporating miso soup into their diet. Doctors Lidia Yamchuk and Hanif Sharimardanov wrote: "Miso is helping some of our patients with terminal cancer to survive. Their blood improved as soon as they began to use miso daily."

In another Japanese study that spanned a 25-year period, the Japanese Cancer Institute tracked 260,000 subjects and divided them into three groups. The first group ate miso soup daily, the second group consumed miso 2-3 times a week, the third group ate no miso at all. The results showed that those who had not eaten any miso had a 50% higher incidence of cancer than those who had eaten miso.

Basically, the regular consumption of miso products helps protect the body from some of the toxic effects associated with radioactivity exposure due to the presence of an ingredient called **zybicolin**, discovered in 1972, which acts as a binding agent to detoxify and eliminate radioactive elements (such as strontium) and other pollutants from the body.

Because of the presence of zybicolin, miso has been found to counteract the adverse effects of radiotherapy, chemotherapy, and environmental pollution.

You can increase the protective qualities of miso soup even more if 1/4-ounce (5 grams) of dried kelp seaweed is added to the soup for as you know, scientific studies found that seaweed was able to neutralize radioactive isotopes in the human body because they bind to the brown seaweed sodium alginate and increase their excretion from the body by about 80%. For patients receiving radiation treatment, you can even use an external plaster of miso mixed with aloe vera extract on the irradiated area being irradiated to help prevent or heal burns.

So now you know how to add several approaches together. Another food to add to the diet for radiation effects is **tempeh**, which is a fermented soy bean product known to help build red blood cells. It also blocks the intake of radioactive cobalt-60 and zinc-65, and strengthens the immune system.

Of course the various seaweed products such as kelp and nori also offer protection against the effects of radiation and you should consider taking these items several days before and after any diagnostic x-rays.

A big point of this discussion is also the injunction to avoid sugar, wheat and milk after radiation exposure. If you want healing and protection against infection, avoid sugar and things that turn into sugar quickly in the body (wheat flour). Milk is primarily a sugar, and allergic causing foods should also be avoided since they usually put a burden on your immune system when it needs all the help it can get. [Black and Green Tea to Remove Radioisotopes and Protect Against Cancer](#)

In Fighting Radiation and Chemical Pollutants with Foods, Herbs, and Vitamins (Vitality Inc, 1992), author Steven Schecter wrote that both **black and green tea** showed "radioprotective effects" whether consumed either before or *after* exposure to radiation. This anti-radiation effect was observed in several Japanese studies, and studies from China also suggest that the ingredients in tea are radioactive antagonists.

One of the reasons that tea offers anti-radiation effects similar to seaweeds is that the tea catechins absorb radioactive isotopes and removes them from the body, just like the active ingredient *sodium alginate* in kelp seaweed. Epigallocatechin-gallate (EGCG), which is found in some green tea extracts, has also been shown to protect the body's cells against the free radical damage caused by radioactivity.

In other words, much like seaweed the ingredients in green tea absorb radioactive isotopes so that the body can excrete them, and it also contains the cancer fighting compound EGCG.

Rooibis tea, which contains the flavonoid compound **luteolin**, also helps the body withstand radiation ("Radioprotective effect of antioxidative flavonoids in gamma-ray irradiated mice," *Carcinogenesis* 1994 Nov;15). In particular, it protects DNA from radiation-induced free radicals.

When Japanese researchers gave mice pure luteolin, it dramatically protected their bone marrow and spleen against radiation damage, and this flavonoid's radioprotective properties were better than any other plant compound ever tested.

You might consider trying Rooibis. I was first introduced to it at a Chinese medicine training retreat I took some years ago and was surprised how tasty it was compared to green tea, and it doesn't give you the green tea "high." It's the only tea that doesn't have a high content of tannins which makes it safe to give to children to drink.

[A High Fiber and Mineral Rich Diet](#)

To deter the absorption of radioactive particles and improve its excretion, it makes sense that a high fiber diet of easily digested leafy vegetables is recommended (but not of produce exposed to fallout radiation). The purpose behind eating clay, kelp, and pectin is basically the idea of binding radionuclides in the gut, which you also accomplish through a high fiber diet.

The fibrous product chitosan, which is made from crab shells, can also be used to bind heavy metals and radioactive particles. Chernobyl victims given chitosan were also able to eliminate a large degree of radioactivity in only a few weeks. The problem with chitosan, however, is that it can also bind amino acids and lipids which you might need to help repair your body after radiation exposure, so this is not a top recommendation.

Basically, after radioactive exposure you want to be eating almost any type of heavy metal chelating formula, and many nutritional supplements have been developed for this purpose, most of which contain the algae and plant fibers and other binding substances.

www.RadiationDetox.com



BIOFILAM (MODIFILAN)

BIOFILAM is a NEW NAME of MODIFled LAMinaria (MODIFILAN)

BIOFILAM (Modifilan) was developed in Russia by a group of scientists who worked in the State Rehabilitation Institute, where victims of the Chernobyl nuclear catastrophe underwent treatment. The healing qualities of seaweed had been known for centuries, so the Russian government instructed scientists to find an effective and powerful remedy for the radiation poisoning of that particular

population. After trying out various forms of algae, one type yielded the best scientific data for this purpose. It was the brown seaweed known as *Laminaria japonica*, which grows wild in the northern Pacific Ocean off the coast of uninhabited islands far to the East of Russia, known as the Kurils.

That time the brand name for this food supplement was MODIFILAN. Our own production and strict control system for the quality of raw material and the quality of food supplement permit our Company to give our consumers and distributors 100% guarantee on our food supplement quality. We had to refuse from our ex-partner's services and decided to establish our own subdivision for distributing our food supplements on the market of the USA. This taken step will allow us, first of all, to reduce the price for our food supplements, and I am sure that such reduction, in its turn, will become more bargainable for our kind customers.

We also sure that this step will allow us to bring our new creations to you, our customers, rather effectively and quicker. The operation of our ex-partners was less effective in solving these tasks. We have made a rebranding of our food supplements and now our traditional food supplement "MODIFILAN" has a new title "BIOFILAM" and "U-Fn" has a new title "UF-n". Our intention is to introduce BIOFILAM, CARDIOLAM, PURILAM and UF-n and provide education about their vast amount of benefits. In the following pages, you will find much important information about these very special nutritional products - such as, studies done on BIOFILAM, CARDIOLAM, PURILAM and UF-n and other scientific data, testimonials from doctors, and personal experiences from customers who have chosen our products as their way of healthy living.

One of the main qualities of *Laminaria* is its high content of alginates, which are enhanced by the extraction process used to produce BIOFILAM. Alginates are the most effective organic elements that enable the human body to get rid of heavy metals and toxins. Not all "algae" have alginates; blue or green algae does not. According to scientific testing, only this brown seaweed does! The unique method of extraction, as well as the quality of this seaweed, are leading. BIOFILAM has about 55% of the highest quality alginates.

The low-temperature processing of BIOFILAM causes sloughing off of the heavy outer fibers of the seaweed, while retaining the essential properties of the plant. This process further enhances its bio-availability, making the *Laminaria* more digestible. Forty five pounds of raw *Laminaria* are required to make one pound of BIOFILAM. Eating 8 capsules of extract a day provides the same amount of good, organic micro- and macro-elements contained in entire plate of this nutrient-rich seaweed. And, it is not cooked. The oldest Japanese recipes of preparing seaweed tell us to eat seaweed raw, rather than cooked. Modern science affirms that an anti-cancer substance called Fucoidan, as well as beneficial polysaccharides, will break down if the seaweed is cooked. This was determined when studies were performed on the Japanese island Okinawa, known for its lowest cancer death rate in Japan.



Laminaria Japonica

The powers of seaweeds have been drawn upon for centuries for their ability to prolong life, prevent disease, impart beauty and health. Worldwide research is continuously being done and brown seaweed has been found to be the most beneficial type. The soft inner part of the brown seaweed is squeezed out of the leaves and made into dry powder using a simple cold-temperature extraction process that

retains the important organic elements. When taken with plenty of water, our natural products deliver all of the naturally occurring minerals and vitamins of *Laminaria japonica* in a soluble, bio-available form that is easily digestible.

This seaweed is harvested from the Kuril Islands, where it grows the largest. Here the cold water flowing down from the Arctic meets the warm water from the south in a great swirl that forms the best habitat for all types of seafood, from the smallest shrimp to the largest whales. Our divers bring the seaweed to shore, where the huge *Laminaria japonica* leaves are hung across wooden fences to quickly dry in the sun in the traditional Japanese way. The seaweed is then transported to a plant where it is soaked in fresh water, which is retained so as not to lose the water-soluble polysaccharides. Within about eight hours the leaves return to their original size and the outer skin can be removed. All the heavy fibers are disposed of, and the remaining inner part is ground up. The resulting thick, rubbery substance is dried in a vacuum chamber without using heat so as not to lose any of the original nutrients.

The benefits of brown seaweed have been known for centuries past by those cultures who use it. Our brown seaweed products are produced exclusively from the *Laminaria japonica* species.

This species contains high levels of:

ALGINATES - are extremely effective organic elements that assist the body with detoxification.

ORGANIC IODINE - can boost the immune system and help support a healthy Thyroid gland which controls metabolism and can therefore assist with weight loss.

FUCOIDAN - can eliminate harmful cells, such as cancerous cells from the body.

LAMINARIN - A polysaccharide which can help in the prevention and treatment of cardiovascular diseases.

Today, Fucoidan is the subject of more than 600 unsolicited, independent, third-party scientific studies that all validate its astonishing life-sustaining, immune-supporting properties. It's hailed in such reputable medical journals as:

Medical Journals

- Anticancer Research
- Infection and Immunity
- The British Journal of Pharmacology
- Nutrition and Cancer
- Developmental Biology
- The Journal of Molecular Immunology
- Journal of Neuroimmunology
- Antibiotics and Chemotherapy
- Brazilian Journal of Medical and Biological Research

Working on both a cellular and sub-cellular level, FUCOIDAN boasts an almost endless list of health benefits. Based on the research, FUCOIDAN may just be the most powerful immuno-supporting nutrient ever discovered!

The combination these active ingredients in *Laminaria Japonica* make it an extremely effective detoxifier of heavy metals and radioactive elements. Together, these ingredients are ideal absorbers of toxins because they bond with these contaminants and promote their disposal outside the body. The toxins that we absorb from our environment can be linked with many diseases. For example, it is suspected that an accumulation of excess aluminum may contribute to a brain deterioration known as Alzheimer's disease. Radiation from nuclear fallout, X-rays, microwaves, high-voltage power lines, televisions, computer monitors, cell phones and many other sources saturate people with radiation which can contribute to cellular distortion, leukemia and other forms of cancer, birth defects, anemia and other diseases. The elements found in *Laminaria Japonica* were first used in Chernobyl to treat victims of radioactive fallout with great success.

In modern day, research and testing is continuously done all over the world, confirming the beneficial nutritional and medical uses of brown seaweed. In fact, more and more beneficial uses for it are continuously discovered. People all over the world can claim to brown seaweed prolonging life and preventing disease by bolstering the immune system. It can protect against Thyroid cancer and other

cancers, help decrease high blood sugar and cholesterol levels. It can detoxify the body from radioactive elements and other biochemical pollutants, over-processed foods infused with unnatural chemicals as well as the affects from use of drugs and alcohol. It can help with negative affects of poor nutrition and unbalanced diet, weight loss, hair and nail growth as well as much, much more.

BIOFILAM is not just another dry seaweed product - it is highly concentrated product. FORTY FIVE pounds of raw seaweed is needed to make ONE pound of BIOFILAM.

What does BIOFILAM do?

- Boosts the immune system.
- Can help protect against thyroid cancer and other cancers.
- Helps to decrease high blood sugar and cholesterol levels.
- Detoxifies the body from heavy metals, radioactive elements, free radicals and toxins.
- Helps those who are overweight by improving the function of the gastro-intestinal tract.
- Improves the structure of hair and nails and help them to grow.
- Help to detoxify smokers from strontium and cadmium.

Our brown seaweed is harvested from the clean, pristine waters of the Northern Pacific Ocean. BIOFILAM is bottled in the United States and is now available in retail packaging. It comes to you in plastic bottle, which contains ninety 500 mg capsules each.

The Food and Drug Administration has not evaluated these statements.
This product is not intended to diagnose, treat, cure or prevent any disease

Certificate of Analysis



The image shows a 'Certificate of Analysis' for BIOFILAM. At the top left is the 'SEAWEED' logo. At the top center is a circular logo with a globe. The title 'CERTIFICATE OF ANALYSIS' is centered. Below the title, there are two columns of text. The left column lists 'PRODUCT ID: BAF001', 'LOT: 1001', 'ANALYST: J. L. Smith', 'DATE: 10/10/10', 'COMMENTS: 100% pure', 'MOI: 1.00', 'MOI: 1.00', 'MOI: 1.00'. The right column lists 'ANALYST: J. L. Smith', 'DATE: 10/10/10', 'COMMENTS: 100% pure', 'MOI: 1.00', 'MOI: 1.00', 'MOI: 1.00'. Below this, there is a section for 'ANALYST: J. L. Smith' and 'DATE: 10/10/10'. At the bottom, there is a signature and a stamp.

CERTIFICATE OF ANALYSIS	
PRODUCT ID:	BAF001
LOT:	1001
ANALYST:	J. L. Smith
DATE:	10/10/10
COMMENTS:	100% pure
MOI:	1.00
MOI:	1.00
MOI:	1.00

ANALYST: J. L. Smith
DATE: 10/10/10

Signature: [Signature]
Stamp: [Stamp]