

Smart Grain Flax with EPA/DHA, 454 g. through the *Centre for Healthy Living*

Omega 3 is a group of long-chain, double bond fatty acids that are highly unsaturated. The parent fatty acid of the omega 3 series is alpha-linolenic acid commonly abbreviated as ALA. The other two are EPA and DHA. Whereas ALA is found in nuts (walnuts, almonds) beans and certain green leafy vegetables. The EPA and DHA are found only in marine plants (algae) and fish. The more oily the fish (herring and sardines) the more EPA and DHA is present.

Omega 6 is also a group of long chain fatty acids and the parent fatty acid in this group is linoleic acid (LA). Omega 6 is mainly found in vegetable oils, margarine, breads, baked goods, meats, eggs, poultry, and cereals.

The dietary intake levels of Omega 3 and 6 are reflected in their concentrations in the cell membranes where they play a very important role in keeping these membranes soft and supple facilitating the uptake of nutrients and elimination of toxins. EFAs must be acquired through the diet; our bodies cannot make them.

The ratio of Omega 3 to 6 fatty acids is important which is why we hear so much about the need to boost fish oil supplements and more fish in the diet. Another important distinction has to do with the action of certain enzymes produced by Omega 3 and 6 fatty acids. The small hormone-like molecules called eicosanoids regulate vital cellular functions in the human body like blood pressure; inflammation response; blood-platelet aggregation (stroke), and immune function.

Cell membranes rich in Omega 3 fatty acids (EPA and DHA) will produce eicosanoids that produce effects that are beneficial to human health, while cell membranes higher in Omega 6 fatty acids will produce eicosanoids that adversely affect the human health. Education is key considering that the western diet reflects a 10:1 ratio of Omega 6 over 3; whereas Health Canada recommends the ratio of 4:1. As a result, most health care professionals recommend lowering Omega 6 consumption and increasing Omega 3.

Both EPA and DHA are vital for our brain, vision and immune system and to the regulation of the inflammatory response. They also lower blood triglycerides. Recent studies show flax helps to prevent coronary heart disease; hypertension; type 2 diabetes; rheumatoid arthritis; autoimmune disorders; and psychiatric diseases. How much is recommended daily? 130 mg of EPA & DHA and 2000 mg ALA. Fish consumed 2-3x a week provides a combined daily intake of 500 mg of EPA & DHA.

Smart Grain flax is sprouted flax ingrained with EPA and DHA. Regular flax contains only ALA. Smart Grain flax does not rely on individual efficiency of conversion of ALA to EPA and DHA. It delivers all three Omega 3 fatty acids: ALA, EPA and DHA to the tune of 399 mg/100 g of EPA and 290 mg/100 g of DHA and 21,372 mg of total omega 3 fatty acids. Smart Grain flax also contains 22% protein; Vit. C & E; digestive enzymes; lactobacillus acidophilus; and both soluble and insoluble fiber.

Cost: Regular flaxseed is \$12 and DHA-enhanced flaxseed is \$16 (no tax).

Barley Grass Sprouts and Juice – Exceptional Nutritional Value

Excellent for treating diabetes, high cholesterol, and obesity. The link with diabetes is that the fiber in barley seeds delays stomach emptying and slows down the absorption of carbohydrates from foods.

Oil extracted from barley seeds may help to control blood cholesterol levels. Barley oil contains fatty acids that are thought to block the production of chemicals that lead to the formation of deposits in the blood vessels. When unsaturated (plant) fats replace saturated (animal) fats in the diet, blood cholesterol levels may be lowered and the risk of heart disease may decrease.

Both barley seed and barley oil contain calories that can contribute to weight gain. However, barley seed fiber actually may help individuals lose weight by creating a feeling of fullness that lasts because the fiber swells causing stomach contents to stay in the stomach longer. Barley seeds may also protect against colon cancer.

Barley sprouts contain more protein than unsprouted barley. It also has high amounts of insoluble fiber. In several studies of humans, sprouted barley grass has helped to relieve diarrhea, inflammation, pain, and other symptoms associated with gastrointestinal conditions such as ulcerative colitis. In lab animals, it has shown to be helpful in reducing chemical damage to the lining of the colon.

Usually called barley grass, the leaves and leaf juice of the barley plant also appear to lower blood cholesterol levels. A small study conducted in China showed that taking barley grass decreased LDL for patients with type II diabetes. In addition, chemicals in barley grass may delay or prevent the development of blood vessel damage that can be caused by diabetes. Barley grass also contains large amounts of beta carotene, folic acid, calcium, and several B vitamins.

HOW MUCH TO USE

Most people drink one of the one oz. containers of sprouted barley grass juice from Eversprings Farm every day as a preventative measure. It can just be defrosted and downed like a “shooter” and I recommend doing that before you work out or go for your healthy daily walk. OR if you are squeamish about that (it really doesn’t taste horrible so not to worry) then just add it to juice.

I recommend adding one 1-oz barley grass as a super foods booster to green smoothies. Often times I’m also adding another super foods like gogi berries, in 1 tbsp amounts. One has to keep in mind that adding more than one oz. barley or 1 tbsp. will change the flavour of your drink. My recipes are delicious tasting and I want to enjoy every sip of them so decide for yourself if you want to adapt your recipes should you be on the path to becoming a green smoothie guru. The seabuckthorn berry juice (frozen one-oz containers) are best served up in a fruit smoothie.

Cost: Sprouted barley grass comes in 15 x 1 oz. vacuum packed bags @ \$15.

Green Foods and Barley Grass -- article from Oprah's Website by Dr. Perricone

When we talk about "green foods," we're referring to a group of foods that includes young cereal grasses like barley grass and wheat grass, as well a blue-green algae known as BGA. Nutritionally, they are close cousins to dark green leafy vegetables, but offer far greater levels of "nutrient density." In other words, an ounce of these concentrated green foods contains much more of the beneficial phytonutrients found in an ounce of green vegetables.

The results of many experimental studies show that green foods have marked beneficial effects on cholesterol, blood pressure, immune response and cancer prevention. These effects are attributed in part to their high concentrations of chlorophyll. Chlorophyll, the phyto-chemical that gives leaves and plants their green hues, is the plant equivalent of the oxygen-carrying red pigment hemoglobin in red blood cells. Dietary chlorophyll inhibits disease bacteria and exerts therapeutic effects on bad breath and internal odors.

Young cereal grasses—especially wheat and barley grass—are distinguished by their brilliant emerald green hues. Before World War II, drug stores throughout the country, but especially in the grain-belt states of the Midwest, sold tablets of dried wheat or barley grass as a kind of primitive vitamin supplement. Today, young wheat and barley grasses are dried and powdered to make dietary supplements, or picked fresh to process in juicing machines.

At the early grass stage of their growth, wheat and barley are closer to vegetables than grains in composition. This is important to note because while I strongly discourage eating wheat and wheat products, I believe wheat grass is an excellent addition to your diet.

The nutrient profiles of green cereal plants change quickly as they grow. As the plant grows, the chlorophyll, protein, and vitamin content of cereal grasses declines sharply and the level of cellulose (indigestible fiber) increases. Over a period of several months, the green leafy cereal grasses become amber waves of grain bearing the kernels we harvest to make into flour—an unhealthy, pro-inflammatory food.

There is very little nutritional difference between wheat grass and barley grass, although it is important to note that barley grass acts as a free radical scavenger that also reduces inflammation and pain, and wheat grass contains P4D1, a "gluco-protein" that acts like an antioxidant, reducing inflammation. It is also thought to be able to help the body attack cancer cells.

You can get cereal grasses in powder or tablet form. Dried cereal grasses are certainly easier to handle than fresh, which must be juiced. However, fresh grass juice contains healthful enzymes not found in dried grass powder, and is likely to be higher in just about every phyto-nutrient found in cereal grass. Many juice bars and health-oriented markets offer these juices on their menus.

SEA BUCKTHORN

By Subhuti Dharmananda, PhD, Director, Institute for Traditional Medicine, Portland, OR



Sea buckthorn (*Hippophae rhamnoides*) is one of the important natural resources of the mountainous regions of China and Russia. The plant grows naturally in sandy soil at an altitude of 1,200-4,500 meters (4,000-14,000 feet) in cold climates, though it can be cultivated at lower altitudes and into temperate zones. Recently it has been extensively planted across much of northern China, and in other countries, to prevent soil erosion and to serve as an economic resource for food and medicine products. For example, Canada has invested in planting sea buckthorn, originally brought over from Siberia in the 1930s, hoping to develop a good agriculture market; Saskatchewan has ideal growing conditions, yielding a high quality product.

Aside from erosion control, the plant is primarily valued for its golden-orange fruits, which provide vitamin C, vitamin E, and other nutrients, flavonoids, oils rich in essential fatty acids, and other healthful components. The leaves are now also being used for making a beverage tea; they additionally contain triterpenes. The following constituents are among those that have been found in the fruits:

Constituents of Sea Buckthorn Fruit (per 100 grams fresh berries)	
Vitamin C	200-1,500 mg (typical amount: 600 mg)
Vitamin E (mixed tocopherols)	Up to 180 mg (equal to about 270 IU)
Folic acid	Up to 80 mcg
Carotenoids, including beta carotene, lycopene, zeaxanthine; these contribute the yellow-orange-red colors of the fruit	30-40 mg
Fatty acids (oils); the main unsaturated fatty acids are oleic acid (omega-9), palmitoleic acid (omega-7), palmitic acid and linoleic acid (omega-6), and linolenic acid (omega-3); there are also saturated oils and sterols (mainly β -sitosterol)	6-11% (3-5% in fruit pulp, 8-18% in seed); fatty acid composition and total oil content vary with subspecies
Organic acids other than ascorbic (e.g., quinic	Quantity not determined;

acid, malic acid; ingredients similar to those found in cranberries)	expressed juice has pH of 2.7-3.3
Flavonoids (e.g., mainly isorhamnetin, quercetin glycosides, and kaempferol; these are the same flavonoids as found in <i>Ginkgo biloba</i> .)	100-1,000 mg (0.1% to 1.0%)

The flavonoids of sea buckthorn (mainly from fruit pulp; also in the leaves) and the oils of sea buckthorn (primarily in the seeds, but also in the fleshy part of the fruit) are the two items specially extracted for medicinal use. Thus, for example, a flavonoid extract product is commonly produced that contains 80% flavonoids, with 20% of residual oils, vitamin C, and other components. Sometimes the flavonoid extract is combined with an oil extract; for example, a flavonoid-oil capsule (made from flavonoid extract and oil extract blended together in a soft gelatin capsule) is produced for use in treating cardiovascular disease.

In the oil fraction, the unsaturated fatty acids are of greatest interest; extracted oils have less of the flavonoids and almost none of the vitamin C of the fruit. The oil components from several samples have been analyzed as follows:

Main Constituents of Sea Buckthorn Oils from Seed, Fruit Pulp (juice), and Fruit Residue After Removing Juice. Figures are in milligrams per 100 grams or in percent (as indicated for breakdown of fatty acid composition).

Ingredient	Seed Oil	Pulp Oil	Fruit Residue Oil
Vitamin E	207	171	300-600
Vitamin K	110-230	54-59	-
Carotenoids	30-250	300-870	1280-1860
Total acids	11	38	-
Total flavonoids	-	-	550
Total sterols	1094	721	-
Oil Profile			
Unsaturated fatty acids	87%	67%	70%
Saturated fatty acids	13%	33%	30%

The fruit residue, which includes the outer peel, is rich in the colorful carotenoids and vitamin E; the seed has the highest level of the unsaturated fatty acids and sterols.

HEALTH APPLICATIONS

Sea buckthorn has been shown to have a potent antioxidant activity, mainly attributed to its flavonoids and vitamin C content (1). Both the flavonoids and the oils from sea buckthorn have several potential applications (2). There are five areas of research that have been focal points for their use: as an aid to patients undergoing cancer therapy; a long-term therapy for reduction of cardiovascular risk factors; treatment of gastrointestinal ulcers; internal and topical therapy for a variety of skin disorders; and as a liver protective agent (for chemical toxins) and a remedy for liver cirrhosis.

Cancer therapy: Most of the work done in this area has been with laboratory animals. The Department of Radiation Biology, Institute of Nuclear Medicine and Allied Sciences, in Delhi, India has published several reports on the potential of a hippophae extract (an alcohol extract, which would mainly contain the flavonoids) to protect the bone marrow from damage due to radiation; his group also showed that the extract may help faster recovery of bone marrow cells (3). In China, a study was done to demonstrate faster recovery of the hemopoietic system after high dose chemotherapy (with 5-FU) in mice fed the sea buckthorn oil (4). The seed oil has been found to enhance non-specific immunity and to provide anti-tumor effects in preliminary laboratory studies (5, 6).

Cardiovascular diseases: In a double-blind clinical trial conducted in China (7), 128 patients with ischemic heart disease were given total flavonoids of sea buckthorn at 10 mg each time, three times daily, for 6 weeks. The patients had a decrease in cholesterol level and improved cardiac function; also they had less angina than those receiving the control drug. No harmful effect of sea buckthorn flavonoids was noted in renal functions or hepatic functions. The mechanism of action may include reduced stress of cardiac muscle tissue by regulation of inflammatory mediators (8). In a laboratory animal study, the flavonoids of sea buckthorn were shown to reduce the production of pathogenic thromboses (9). Some simple formulas based on sea buckthorn have been developed recently for treating cardiac disorders. For example, there is a liquid preparation of sea buckthorn flavonoids with carthamus (safflower) and licorice, called *Ai Xin Bao* (from the Shanxi Ai Xin Biological Technology Development Center), which is intended for use in treatment of coronary heart disease and sequelae of heart attack and stroke, through improving blood circulation and restoring cardiac function.

Gastric ulcers: Hippophae is traditionally used in the treatment of gastric ulcers, and laboratory studies confirm the efficacy of the seed oil for this application (10, 11). Its functions may be to normalize output of gastric acid and reduce inflammation by controlling pro-inflammatory mediators.

Liver cirrhosis: A clinical trial demonstrated that sea buckthorn extracts helped normalize liver enzymes, serum bile acids, and immune system markers involved in liver inflammation and degeneration (12). In addition, sea buckthorn oil protects the liver from damaging effects of toxic chemicals, as revealed in laboratory studies (13).

Skin: An ingredient of the oil, palmitoleic acid, is a component of skin. It is considered a valuable topical agent in treating burns and healing wounds. This fatty acid can also nourish the skin when taken orally if adequate quantities of sea buckthorn or its oil are consumed; this is a useful method for treating systemic skin diseases, such as atopic dermatitis (14). The

only other major plant source of palmitoleic acid is macadamia nuts; the oil is used to nourish the skin. Sea buckthorn oil is already widely used alone or in various preparations topically applied for burns, scalds, ulcerations, and infections. It is an ingredient in sunblock-hippophae oil has UV-blocking activity as well as emollient properties-and it is an aid in promoting regeneration of tissues (15). The fruit may also be used for benefiting the hair: the name hippophae, means shiny horse, and refers to the good coat developed by horses feeding off the plant.

SEA BUCKTHORN RESOURCE DEVELOPMENT

Sea Buckthorn has been developed into a major resource for China. The main organization overseeing and promoting its utilization is the China Research and Training Centre on Sea Buckthorn, which has given rise to the International Center for Research and Training on Sea buckthorn (ICRTS).

Many northern Chinese areas have become virtually treeless, even though they were once forested. Soil losses have been huge, and several previous attempts to grow various trees to hold down the soil have been unsuccessful. Sea buckthorn has turned out to be useful because it withstands severe weather and grows huge root systems in poor soil (and fixes nitrogen in the soil). Its planting and maintenance is encouraged by the local people who can earn income from harvesting the fruits (and other parts of the plant). It was noted by ICRTS that in the Loess Plateau of northern China (see map), annual topsoil losses are about 1,600 million tons. Downstream effects include an annual accumulation in the Yellow River of 400 million tons of sediments. Sea buckthorn now covers more than 200,000 hectares (500,000 acres) in the Loess Plateau. Of 360 bird species known to live in the region, 51 entirely depend on sea buckthorn as food and 80 are relatively dependent upon sea buckthorn. For many of the other animal species, sea buckthorn is an important source of food or provides shelter. The leaves and tender branches are a rich source of protein (11-22% by weight).

A similar project was successfully developed in Mongolia where former attempts to use astragalus as the economic plant to stabilize the soil failed, while hippophae succeeded. Having confirmed that sea buckthorn was the most competitive species for the purpose of controlling water losses and soil erosion, a total of 67,000 hectares (166,000 acres) of sea buckthorn forest were planted in Jianping County of Liaoning Province. This helped to increase the vegetation cover from 4% in the 1950s to 34% in the 1990s. Run-off was reduced by 90% and soil erosion declined by 70%. Fodder, fuel wood, and berries contribute to local economic development (up to 3 tons of fresh berries can be collected on every acre of sea buckthorn forest). Several wild animal species have found a habitat in the sea buckthorn forest, including pheasant, hare, and fox. Altogether, China now has over 1.5 million



hectares of sea buckthorn, 40% of it natural, the rest planted. There are over 200 processing plants for sea buckthorn in China.

Sea buckthorn is most frequently used for the treatment of diseases of skin and digestive tract. The most important properties of sea buckthorn anti-inflammatory, anti-microbiological, pain relief and the promotion of tissue regeneration. Sea buckthorn oil is also used to treat vaginal mucositis, cervical erosion, radiation damage, burn, ulcers, skin damage and mucositis.

Other facts: The berries have very high levels of vitamin A and other carotenoids, vitamin C, vitamin E and flavonoids. The vitamin C level of 3600 ppm is about 10 times higher than that of oranges. The seabuckthorn berries are also rich in vitamins B1, B2, K and P. Because of sea buckthorn's thorny nature, it is becoming popular for planting to deter trespassing animals and people.

Cost: Same as the sprouted barley grass juice where you can purchase a vacuum packed bag of 15 x one-oz. containers of sea buckthorn berry juice. When you purchase two bags, you get the box that comes with it.

PLEASE BRING YOUR COOLER IF DECIDING TO PURCHASE ANY FROZEN PRODUCTS