



Summary for Healthcare Practitioners

This is an alphabetical guide to the use of Seagreens® products in the general population. In a clinical setting the Food Capsules and Food Granules provide both a valuable nutritional input and at higher doses for limited periods a controlled nutritional adjunct to therapeutic intervention.

**BALANCE • DETOX • REGULATE •
NOURISH • STRENGTHEN • PROTECT**

INTRODUCTION

Seagreens® products have been developed to provide a convenient and complete dietary foundation for everyday use in the general population. They can also be used to address specific health problems. Our current understanding of the benefits is presented below. We produce only pure whole products of the finest food quality, from our sustainable harvesting of wild Arctic wrack seaweeds which we call Seagreens®. These are outstanding ocean vegetables which contain a uniquely comprehensive balance of nutrients with no excessive components.

HARVESTING

We currently harvest three closely related species of wild Arctic wrack: Ascophyllum (whistle wrack), Fucus (spiral wrack), and Pelvetia (channel wrack). These distinct Arctic varieties are more nutrient dense than their more southerly counterparts such as for example, common European bladderwrack or Japanese Wakame (normally farmed not wild). They are relatively shallow water seaweeds (the opposite of, for example, of deep water kelp or laminaria) and are affected by significantly different factors, including intensive photo-synthesis (24-hour sunshine during the summer months), natural 'culling' of old seaweeds (turbulent winter tides remove plants over 4 years old), and extreme cold

during winter. Only fresh, living wild plants are harvested, cleaned, air-dried and immediately cracked, milled, micronised or puréed to produce a range of convenient, digestible forms. Nothing is extracted or added. There is no root or floating seaweed, no sand or other extraneous material. Our wild harvesting is sustainable, and is carried out each summer among hundreds of islands in the remote Lofoten archipelago, a vast conservation area many miles off the Lapland coast of Norway.

MANUFACTURING & QUALITY ASSURANCE
We were the first Organic European producer and remain the only 'ocean-to-table' wild seaweed producer in the world approved to Demeter and Soil Association Standards (respectively the leading European Biodynamic / Organic Certification body and the leading British Organic Certification body). We also supply other Biodynamic and Organic food and animal feed producers - including Artisan Bread in Kent, Bart Spices in Bristol, Camphill Communities in Scotland, Natural Choice canine biscuits in Devon, Neal's Yard Remedies in Dorset, and Old Plaw Hatch Farm in West Sussex - who use Seagreens® pure natural ingredients in their products. Our own branded consumer products are produced in a Class 8/9 Pharmaceutical Cleanroom in GMP manufacturing facilities. Some are also packed in a semi-commercial environment employing 90% adults with learning difficulties.

NOTE

The numbers in brackets throughout the text indicate the scientific or other sources of the information provided. These are listed under References at the end of this document.

"The lack of variety of diets is the basis of many non-infectious health problems. Hundreds of medical studies demonstrate the link between fruit and vegetable consumption and lower risks of cancers and coronary- and obesity-related diseases. Extracting individual components from vegetables and making 'veggie pills' is less effective than eating the entire fruit or vegetable, which is more beneficial than the sum of its parts. Research has shown that the use of 'junk food' has psychologically depressive effects and encourages aggressive tendencies, while adding fruit and vegetables to the diet is associated with better-behaved, healthier citizens. It seems the



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answer is out there, and the choice is ours to pick" (82).

PRODUCT BRIEFING

Seagreens® products are a convenient way for consumers to include this remarkable wild food in their daily diet, as:

- Food Capsules and Food Granules - (see 'Efficacy and Intake' at end of Summary) we micronize 3 seaweed varieties (not powdered to avoid harm to nutrients) because they provide a uniquely balanced and complete dietary foundation for continuous daily use. Not to be confused with common kelp or freshwater algæ like spirulina, chlorella, or blue-green whose partial nutritional profiles are similar to land vegetables;

- Everyday Iodine Capsules - a pure food source including iodine at 350µg per capsule with a significant balance of all the nutrients required for iodine metabolism and nothing added to nor extracted from the seaweed (most 'kelp' capsules and tablets use common kelp seaweed which may be a by-product of alginate extraction, and contain additives such as fillers, binders and flowing agents);

- Culinary Ingredient - ready-milled seaweed grains for use in raw or cooked food

- Salad & Condiment - large dried pieces to grind alone or mix as a condiment or soak in cold or warm water for addition to salads or warm vegetables.

- Pet Granules - a special granular form suitable for all pets and domesticated and farmed animals. Daily inclusion in feed ranges from 1g to 15g in different species, providing an ideal balancing whole food ingredient for performance and sound preventative health.

Seagreens® provide most significantly, all the micronutrients, amino acids, vitamins, minerals and compounds which may be absent from manufactured and land grown foods (whether organic or not) due to soil deficiencies, food travel and storage, processing and preservation methods (6).

"In the last 50 years, runner beans have lost 100% of their sodium, watercress 90% its copper, broccoli 75% its calcium. Levels of other important minerals including magnesium, iron, phosphorous and potassium have also plummeted" (7).

The nutritional value of our food is in steep decline. A comparative study based on government tables published in 1940 and 2002 revealed that the iron recorded in the average rump steak fell by 55% over that period. Calcium is down 4% and magnesium 7%. Milk has lost 21% of its calcium and 62% of its iron, while cheddar cheese has lost 38% of its magnesium, 9% of its calcium and 47% of its iron. Changes in measuring the composition of food could account for some of the decrease, as could changes in the way food is stored and transported, but the Food Commission, an independent consumer watchdog, thinks the impact of intensive farming should be investigated. "One of the key arguments is that today's agriculture does not allow soil to enrich itself," said its director Dr Tim Lobstein, "but depends on chemical fertilisers that don't replace the wide variety of nutrients which plants and humans need" (96).

Since 1945 there has been a 34% decline in vegetable consumption in the UK; only 13% of men and 15% of women are meeting the minimum daily requirement of 5 portions of fruit and vegetables. We also eat 59% less fish than we did then, even though fish is slimming, the principal source of omega-3 fatty acids, and possibly even more 'natural' than non-organically farmed meats (104, 105).

"A deficiency of even a single trace element in a soil can prevent plants thriving, even if all the major nutrient elements, water and light are present in optimal amounts" (77).

In the 51 years from 1940 to 1991, farmed meat lost 41% of its calcium and 54% of its iron, while vegetables lost an average 50% calcium, 25% iron and magnesium, 76% copper and 59% zinc (97). To illustrate a mere fraction of the problem this presents, the body requires magnesium for 300 different daily enzyme reactions, zinc for 200, and so on. For these micronutrients alone, there is no

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better natural source than Seagreens®. It is salutary to recall that the benefits of many micronutrients including those of over half the currently known trace elements were unrecognised until the 1970s (98). Over the same post-War period the saturated fat content of beef and chicken has risen by more than 400%, whilst essential omega-3 fats critical to the nervous, immune, cardiovascular, respiratory, digestive and eliminatory systems have declined in the same proportion (99).

“Britons typically now eat 4 kilograms of additives annually, while the fat content of the average chicken has risen from 2% to 22%...our intake of beneficial omega-3 fatty acids has decreased while the consumption of omega-6 fatty acids has gone through the roof...while...good health requires the two to be in balance...and the trans-fats routinely found in highly processed foods (eg. ready meals, sweets, crisps, salty snacks, takeaways) assume the same position in the brain as essential fatty acids” (103).

“Thousands of young mothers-to-be are putting their children’s health at risk as a result of their unhealthy diets and ‘faddy’ weight loss regimes such as the high-protein, low-carbohydrate regime beloved by celebrities like Geri Halliwell and Jennifer Aniston. A new study of 12,000 women has shown that 4 in 10 young women have such poor diets that when they become pregnant their children are deprived of essential nutrients in the womb. The health of an unborn baby can be affected long before conception, because foetuses do not merely rely on the food consumed by the mother in pregnancy, but draw on nutrients stored in their bodies over preceding months. Poor diets before and during pregnancy can leave children susceptible to a range of diseases in later life including diabetes and heart disease” (90).

Even among seaweeds, [Seagreens®](#) are outstanding vegetables, in that they are nutritionally complete - a genuine ‘whole food’ capable of supporting human life. Several animal species, including Galapagos lizards and Ramsay sheep, have an exclusive diet of seaweed. In our own Lofoten Islands, young wild elk walk miles down the mountains even in summer, to eat the seaweed that grows along the ocean shore.

“Seaweed is the most nutritious form of vegetation on this

planet...it contains almost the whole alphabet of nutrients” (8)
“So concentrated in minerals that they are normally used as a supplementary item in recipes to provide a mineral foundation for better utilization of protein and all other nutrients” (1 p107).

“A broad range of protein content in addition to a remarkable ability to combine with other vegetables, grains and legumes. Not only do they contribute valuable protein and other nutrients, but their mineralization is superior to that of any other plant or animal food” (1 p107).

Of all seaweeds, the brown algæ are the most nutritious, and of these the [Seagreens®](#) Arctic wrack varieties are outstanding. They have been the subject of more research in the past 50 years than any other seaweed because they contain Nature’s broadest and most balanced range of nutrients. For example, the balance of mineral salts bears remarkable similarity to that in our own cellular fluid. [Seagreens®](#) Arctic wrack seaweed has more iron than the commonly known red seaweed Dulse, which itself has 200 times more iron than beet greens, the richest land vegetable. It has some 8 times more magnesium and 100 times more iodine than any land vegetable, and some 14 times more calcium than cow’s milk. A teaspoon of [Seagreens®](#) has more iron than a plate of broccoli and contains special polysaccharides which help prevent cancer-causing proteins from attaching to the lining of the colon (84), (see below under [helicobacter](#)). [Seagreens®](#) are an excellent natural source of magnesium of interest in cases of [osteoarthritis](#) and of iron for [iron deficiency](#). Experience shows that in many cases it is not the dietary amount of the nutrient which is important, but the fact that it is present in [Seagreens®](#) with all the other nutrients necessary for its metabolism and use by the body. [Seagreens®](#) are also Nature’s most alkalizing food, over 75 times more than apples!

Whilst the land has been losing its nutrients for millions of years (accelerated by intensive farming), and the rain does not recycle them (74), these remarkable ocean vegetables do re-absorb all the nutrients leached from the land and we can thus return them to the soil, to plants, and directly to animal and human foods. That, conducted with



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utter integrity and regard for all our relationships, is the purpose of the [Seagreens®](#) brand.

"Its composite ability to address illness states whilst providing a rich nutritional resource and blood/lymphatic fluid detoxification. ... The nutritional profile and purity of Seagreens® is a gift and is exactly what is required" (88).

Consumers and healthcare practitioners have now been using [Seagreens®](#) on a regular basis for more than five years. Their correspondence as well as scientific reports attest to its role in [cancer*](#), [cardiovascular*](#) and [immune*](#) problems, its natural [antibacterial](#) and [antibiotic*](#) effects and its efficacy in the treatment of [candida*](#), [chronic fatigue syndrome*](#), [helicobacter pylori*](#), [hypothyroid*](#), [irritable bowel*](#), [immune deficiency*](#), [indigestion*](#), [mercury toxicity*](#), [stomach ulcer*](#), [weight problems*](#). It appears to have a positive re-balancing, cleansing, detoxifying, regulating and strengthening effect on the whole organism (5). It has beneficial application in many special diets. For [wheat intolerance*](#) [Seagreens®](#) vitamin E contains all the isomers otherwise found only in seeds like wheatgerm. [Seagreens® Food Capsules](#) have been shown to be of particular value in the removal of heavy metals including mercury from [amalgam fillings*](#), and in [Autism Spectrum Disorders*](#). Benefit has also been found in cases of [ME*](#) and Multiple Sclerosis.

[Seagreens®](#) may improve [respiratory conditions*](#) and dryness of [skin*](#). A substantial body of research has investigated the usefulness of the brown seaweeds in the treatment of [cancer*](#), [cardiovascular diseases*](#), [high cholesterol*](#), and poor [thyroid*](#) function. [Seagreens®](#) provide a highly nutritious alternative seasoning in the many cases where salt should normally be restricted, including [candida*](#), [blood pressure*](#), [heart disease*](#), [ulcers*](#), [kidney damage](#), poor [digestion*](#) and [calcium deficiency](#).

"Modern science confirms seaweed as one of Nature's all-round pharmaceutical miracles that can accomplish everything from warding off and treating several types of cancer, lowering blood cholesterol and blood pressure, thinning the blood, preventing ulcers, killing bacteria, even curing constipation" (10).

In 2001 [Seagreens®](#) were first approved and used by the President of the British Society for Mercury Free Dentistry for pre- and post-operative [detoxification*](#) in amalgam extraction. Regular intake may affect [alkalinity*](#), [cholesterol levels*](#), [blood pressure*](#), [circulation*](#), [mineral balance](#), improved [digestion](#) and [metabolism*](#), [sodium*](#) (an ideal salt replacement also helps reduce water retention), [hypo- and hyper-thyroid*](#) and hormonal system, [skin/cellulite](#) and [weight regulation*](#). [Seagreens®](#) micronised powder provides a [remineralizing poultice for the skin*](#) which has been found to be effective for burns, grazes and many skin conditions.

"Seaweeds are highly nutritious, support digestion, help alkalize the body and aid detox. They generally contain over 70 of the micronutrients (vitamins and minerals) that your body needs for health and are also packed with amino acids (proteins). They are also rich in compounds called polysaccharides which cleanse and heal the intestines and help the breakdown of food. These compounds also bind with heavy metals so they can assist with removal of mercury, lead, cadmium etc from the body. There are many different types of seaweed and lots of delicious seaweed recipes. If you really don't like the taste, texture or aroma then try Seagreens seaweed capsules or condiments, made from organic, Arctic bladderwrack, which can be sprinkled on food – delicious!" (107).

The consistently reported benefits of dietary inclusion of [Seagreens®](#), appear to accrue over the long term (6 - 18 months) and are readily maintained thereafter by a very low intake - 1g per day (2 capsules) in adults, more in special cases like pregnancy or less for children. [Seagreens®](#) makes a permanent intake safe and gentle. Whilst the brown seaweeds including common kelp (eg. laminaria) are Nature's finest source of natural iodine, [Seagreens® Food Capsules and Food Granules](#) from selected varieties of Arctic Wrack have only half the iodine of kelp so that a daily intake of [Seagreens®](#) at 1000mg can be sustained indefinitely without excessive iodine, and used in pregnancy and infant feed. Their iodine content is of special interest to [vegans](#) and [vegetarians*](#) who may obtain less than half the RDA from their



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normal diet.

*further comment appears below under 'Alphabetical Indications'

PLEASE NOTE

We are grateful to receive reports, questions and comments which assist our research whether or not conflicting with other evidence. This Summary will shortly be available on our website which we hope will also provide a useful forum for discussion. We are also keen to obtain research assistance and sponsorship especially in detoxification, autistic spectrum disorders, hyperactivity, inflammatory disorders, neurological degenerative disorders, metabolic disorders and other areas where there is already good research and anecdotal evidence for the efficacy of our products.

ALPHABETICAL INDICATIONS

Alkalinity: Acidity within the digestive tract and blood result from many causes are healed. Seagreens®' abundance of alkaline forming minerals and special polysaccharides help balance acidic lifestyles and diets rich in protein, sugar, salt and refined and processed foods.

"Large amounts of minerals (are required) to maintain the blood in an alkaline condition. Seaweeds are best for this" (4).

Wakame (closely related to Seagreens®) is 25.6 times more alkaline-forming than common kelp or laminaria seaweed, 77 times more alkaline-forming than apples, and over 1000 times more alkaline-forming than milk, even though all these are also alkaline forming foods (4).

Allergies and intolerances: Seagreens® are a useful source of nutrients in many special diets. Most of the dietary nutrients which have to be avoided because of allergy, intolerance, various health conditions or mere preference, can be obtained from the seaweed without the problems arising from their normal food source. Seagreens® are

approved by the British Vegan Society and the British Coeliac Society.

Meat and dairy alternatives.

The full amino acid content of meat protein, and the entire B vitamin group also obtained from meat or dairy products, are present in Seagreens®, including fully bioavailable B12. The B12 found in wild wrack seaweed is the predominant cobalamide and an absorbable source for mammals (91). This is in contrast to the B12 in the fresh-water algæ spirulina, which is an inactive, unavailable corrinoid or pseudovitamin. Seagreens® are also an ideal vegetable source of iron (575µg per gram), vitamin E with all its isomers, normally found only in seed oils like wheatgerm (230µg/g), calcium (20mg/g), magnesium (7000µg/g), and many other nutrients. But it is likely that the relationship between the nutrients, rather than the amounts which are present, may be of greatest value to the body.

Thyroid and hormonal disorders

The 'brown' seaweeds generally are a rich source of iodine, but the endocrine system also needs the simultaneous presence of a comprehensive balance of nutrients for its equilibrium. Seagreens® Food Capsules and Food Granules contain approximately 220µg iodine per 500mg, and Seagreens® special Everyday 'iodine' Capsule approximately 350µg per 500mg. In both cases the iodine is naturally chelated, attached to protein ions. None will interfere with thyroxin or suppressant drugs like Carbimazole or radiotherapy and in both hypo- and hyper- thyroidism, provide a sound nutritional basis for hormone regulation.

Salt reduction and replacement

For those seeking to reduce or eliminate dietary salt, Seagreens® Culinary Ingredient, and Salad & Condiment products provide healthy alternatives in which sodium (35mg/g) is balanced by potassium 25mg/g), calcium (20mg/g) magnesium (7mg/g) and all the mineral salts in proportions akin to their ideal ratio in plasma and cells! And that is only half the story: in 1986 scientists found that when stroke-prone rats were overfed salt, only



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those fed wild wrack seaweed powder avoided strokes - the seaweed proved to be an antidote to excess sodium consumption (27)! In stark contrast, so-called 'low sodium salts' like Solo, Lo-Salt, Ruthmol and others have often merely replaced excessive sodium with excessive potassium or other salts. All are highly processed and none are pure whole foods (see below under Salt replacement).

Detoxification and weight control

Detoxification with Seagreens® is best understood as a broad and continuous process rather than the often harsh but fashionable regimes advocated by lifestyle and media pundits. The benefits of a 'clean' system accrue over six months or longer and appear to deliver their peak at 18 months to two years, when there is no reason why they should not be sustained indefinitely. Similarly, Seagreens® appear to achieve weight regulation rather than merely weight loss, helping the body to return to and maintain its natural homeostasis or equilibrium (see below under Weight regulation).

Pregnancy, lactation and recuperation

Seagreens® Food Capsules and Food Granules are particularly suitable for use during pregnancy, and in recuperation after childbirth and throughout lactation, because their nutritional profile is well balanced across their unique mixture of different seaweed varieties (*Fucus*, *Pelvetia*, and *Ascophyllum*). The Food Capsules became a staple for the author of *The Organic Baby Book*. Her first child - still flourishing - received the contents of a single capsule in infant feed from about 6 months (106)! Also prior to conception, parents-to-be might have something to gain, since although unflattering the comparison may be, well documented improvements in milk quality and yield and the fertility of livestock have long been known to farmers!

No allergenic substances

There are no known allergenic substances in Seagreens® and since their introduction in 1998 not a single case of intolerance or biological rejection has been reported. The formulated 'green

superfoods' on the other hand, often combine different land vegetables in an attempt to provide an entire spectrum of phytonutrients. They may therefore contain one or more ingredients unsuitable in a special diet. Wheat and barley grass, soya, alfalfa and avocado are just a few such ingredients to which intolerance is not uncommon.

Amalgam fillings: (see below under Detoxification, and Mercury toxicity). Dr. J. G. Levenson, founder of the British Society for Mercury Free Dentistry first adopted Seagreens® Food Capsules for post-operative detoxification in amalgam extraction. The product continues in successful use by a number of eminent practitioners in this field (95).

Antibacterial and antibiotic: (see also below under *Helicobacter pylori*/ulcer) Laboratory research showed wild wrack seaweed extract to be as effective as antibiotic drugs against common food poisoning bacteria including *Staphylococcus aureus*, *Treptococcus pyogenes*, and *E. coli*; the fungus *Candida albicans*; and a bacterium associated with pneumonia (19).

Autistic spectrum disorders: (see also below under Detoxification, Hypothyroid, Immune deficiency, and Mercury toxicity). Seagreens® may be useful in the treatment of a number of common problems in autism spectrum disorders, specifically:

- the inability to deal with heavy metals (see below under Detoxification);
- compromised immunity (see below under Immune deficiency);
- thyroid disorders (see below under Hypothyroid).

Seagreens® comprehensive balance of nutrients includes a unique range of polysaccharides, stable protein-bound iodine, the full range of amino acids including cysteine necessary for the production of metallothioneins (MTs), all the minerals and trace elements including zinc. Articles relating to the possible relevance of these features can be found in *The Autism File* (80). Seagreens® bind and remove or neutralize heavy metals including mercury, lead, cadmium, and radionuclides. The body's detoxification system:



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“in order to function well, has to have a constant supply of certain nutrients: zinc, magnesium, selenium, molybdenum and other minerals and trace elements, hundreds of enzymes, many amino-acids and essential fats - all the substances which our autistic children are deficient in” (85).

Seagreens® may be able to assist in regulating the metabolism and thyroid and provide a consistent nutritional foundation for the restoration of homeostasis. Whilst the path of autism can vary widely in different individuals, presenting a disparate range of symptoms (1), Seagreens® may prove helpful where there is evidence of the following (81):

- Inability to bind and remove heavy metals
- Deficient amino acids
- Mineral imbalance
- Thyroid disorders, hypothyroid
- Dysfunctional digestion, dysbiosis, acidosis
- Compromised immunity, candida
- Disturbed fatty acid metabolism, electrolyte imbalance
- Dry skin, listless hair, poor circulation
- High levels of free radicals

A previously unreleased confidential report from the US Centers for Disease Control reported that an exposure to more than 62.5 micrograms of mercury within the first three months of life more than doubles a child's risk of developing autism. The US legal firm Waters & Kraus, who are representing many families in a class action, indicated that in many of the cases the firm evaluated, the affected child had received more than 62.5 micrograms of mercury through paediatric vaccines in the first three months of life. (86).

In 2000, Sallie Bernard and colleagues linked the mercury based preservative thimerosal (ethyl mercuri thiosalicylic acid) not only to autism but to related syndromes such as ADHD (89). Thimerosal is used widely as a (mercury-based) preservative in vaccines, antitoxins, tuberculin tests and desensitisation solutions. It may also be found in soap-free cleansers, nose, eye, and ear

drops, eye ointments, topical medications, antiseptic sprays, cosmetics (including makeup removers, eye moisturisers, and mascaras) and cleaning fluids for contact lenses. UK regulators have recommended phasing out its use in vaccines (87).

Statistical evidence from California, USA research between 2003 and 2006 provided evidence of a significant decline in the number of reported cases of autism following the mandatory removal of (mercury-based) Thimerosal-containing vaccines. Reported cases declined by 22%, or 35% compared to projections based on the rise between 1989 and 2003 (115). During the 1990s the number of mercury-containing vaccines given to pre-school children increased dramatically.

Clinical nutritionist Jonathan Tommey identifies 7 key areas where “Seagreens® may prove beneficial to many autistics” focussing on Seagreens® ability to:

- Bind heavy metals
- Increase amino acids for the anabolism of many enzymes, hormones and cellular structures
- Regulate mineral imbalances
- Provide thyroid function with tyrosine and its active co-factor in thyroxine, iodine (he points out studies have found autistics to be hypothyroid; shown by iodine tincture being rapidly absorbed)
- Balance acidosis from autistic diets rich in acid forming foods, supporting beneficial gut bacteria
- Support the lymphatic system vital to remove toxins and infectious pathogens (he cites frequent infections and inflammation of the glands being helped by Seagreens®)
- Rejuvenate gastro-intestinal tract and lungs with significant input of the seaweed polysaccharides (108).

Blood pressure: (see also below under Cardiovascular, Cholesterol, and Salt Replacement). Against nearly 40% sodium in salt, there is only 3.5% sodium in Seagreens® together with all the other minerals, trace elements and compounds

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naturally chelated and in a balance which is ideal for the human body (potassium 2.5%, Magnesium 0.7%, Calcium 2%, etc). Seagreens® Culinary Ingredient (pure seaweed granules) can replace salt in most recipes, balancing blood and cells, aiding full metabolism, helping to regulate and 'clean' the internal environment. Seagreens® also provides a well-balanced supply of naturally chelated iron (575µg/g) valuable in the treatment of low blood pressure, and the most important anion magnesium whose lack is proven causal in heart and circulation diseases. Japanese research in the 1980s used wrack seaweed as a hypotensive drink to significantly reduce blood pressure with no side effects (26), and isolated hypotensive chemicals including histamine from the seaweed. Wrack seaweed has also been shown to lower high blood sugar, due to its natural combination of nutrients especially chromium which is active in blood sugar control and iodine which aids metabolism. Japanese scientists found a substance in brown seaweed which when tested in rats:

“was twice as powerful as heparin in antithrombin (clot-dissolving) activity” (10).

Hypotensive chemicals including histamine, which reduce blood pressure, have been isolated from wrack seaweed (10). Research especially at Lund University in Sweden confirms the beneficial effect of Omega-3 on blood pressure and blood cholesterol levels (25). In the early 1990s Russian researchers claimed to have achieved the following results by feeding patients up to 10g per day of polysaccharides in the form of wrack seaweed dried powder for 3 months: cholesterol reduced by 26.5%; B-lipoproteins reduced by 25.1%; triglycerides reduced by 32.1%, No negative reactions were found in the kidneys, liver or other organs. No side effects were found (60).

“Since most instances of high blood pressure not only involve arterial problems but are also closely related to excesses of the liver, very small amounts of whole salt - ideally in the form of seaweed - can help detoxify the liver, once poor quality and fatty foods are eliminated from the diet and the blood pressure is out of the danger zone” (1 pp157, 162, 163).

Blood types: (see also under Helicobacter pylori/ulcers, below). Wrack seaweed (of the various species 3 are contained in Seagreens® Food Capsules including Fucus referred to here as 'bladderwrack') The wrack seaweeds are excellent nutrients especially for Type O blood types. Dr P J D'Adamo (3) highlights the large amount of the sugar fucose, the basic building sugar of the O blood antigen which he notes as protecting the intestinal lining. The alkalizing effect of wrack seaweed also helps counter the hyperacidity of the Type O digestive tract, reducing the potential for ulcers. Seagreens® is also a good source of vitamin K an important blood-clotting factor. Whilst conventional iodine supplements are not recommended, the iodine content in wrack seaweed is an ideal source to feed unstable thyroid metabolisms which in Type O have a tendency to cause weight gain, fluid retention and fatigue. This is also a valuable source of the mineral manganese because Type Os would otherwise have to obtain these from whole grains and legumes which they have difficulty in digesting and are commonly intolerant to. Among all the vegetables for Type Os wrack seaweed is listed as 'highly beneficial'. Seafood generally, the second most concentrated animal protein, is best suited for Type Os of Asian and Caucasian Asian (Eurasian) descent. Blue-green algæ should be avoided. D'Adamo lists seaweed among only 6 recommended supplements in the blood type O diet and Seagreens® contains all the other 5 with the exception of licorice which can be purchased as a desiccated natural root for making delicious tea. Seagreens® Culinary Ingredient (*Ascophyllum wrack*) can also be infused in water overnight and drained off as tea, alone or as an ingredient.

Burns: (see also under Skin below) Seagreens® has been used to remarkable effect on burned and grazed skin and on skin where the outer layer has been partially or wholly removed (for example by burning or steaming). Seagreens® Microgranules can be prepared by mixing with a warm pure distilled or mineral water in the manner of a poultice or facepack until a suitably moist, warm paste can be applied - preferably at body temperature - to cover the affected area without

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dripping off, even where the skin is grazed or broken. It may be applied where there is severe inflammation which will normally calm down rapidly. It is preferable then to dress the area with an even moister compress and cover, so that the moisture will be retained in the seaweed, and leave for several hours or if possible overnight. The Microgranules are air dried homogeneous micronized particles of Seagreens® single wild Arctic wrack called *Ascophyllum nodosum*. This has an outstanding balance of nutrients which include all the minerals and trace elements, growth hormones and numerous betaines. Both the seaweed and its extracts are widely used in wound dressings and thalassotherapy (eg. seaweed body wraps). As a food ingredient, it has long been known to improve the bloom of horses, dogs and mink, not to mention human hair, skin and nails.

Cancer: (see also below under Cholesterol, Detoxification, and Salt replacement)

Approximately 1/3rd of the US population will eventually contract a form of cancer. Research at Harvard School of Public Health concluded:

“seaweed has shown consistent anti-tumour activity. In extrapolating these results to the Japanese population, seaweed may be an important factor in explaining the low rates of certain cancers in Japan” (16).

Seagreens® offers a useful nutritional input in cancer prevention, management and recuperation. Several varieties of kombu (like Seagreens® also a member of the *phæophyta* or brown seaweed family) are a traditional decoction for cancer in Japan, where scientists have been able to verify its effective treatment of tumours in the laboratory with:

“complete regression in more than half the treated group” (17).

The principal cancer-fighting substances are the special polysaccharides in the brown seaweeds, in Seagreens® typically as much or more than 50% of total carbohydrate which itself accounts for more than half the composition of nutrients, especially fucose and fucoidan which has been

shown to cause the destruction as well as the inhibition of cancer cells by preventing adhesion to healthy cells and by interruption of the DNA within the cancer cells (29, 30, 37). The polysaccharides are now known to have anti-cancer, anti-coagulant, anti-thrombotic, anti-inflammatory, and anti-viral properties. A substantial body of literature covers this subject with special reference to brain tumour (37), breast cancer (31, 32), intestinal cancer (39), leukemia (36, 38), lung cancer (29, 33, 34, 35, 36), throat cancer (43), and research into the mode of action (40, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52). Korean research also highlighted the role of sulphated fucoidan in the polysaccharides (92).

A 2003 study in Japan which followed the dietary habits of 40,000 men and women found that the risk of stomach cancer in men with a low-salt intake of 4g to 6g daily was 1 in 1,000 per year, but double in men consuming 12g to 15g per day. The risk for women on a low-salt diet was 1 in 2,000 per year but on a high level diet increased to 1 in 1,300 (93). Researchers discovered that when stroke-prone rats were overfed salt, only those also fed seaweed powder did not have strokes; indicating that the seaweed was a protective antidote to the excess sodium consumption (27).

Seagreens® are highly alkalisising - some 75 times moreso than apples - and an alkaline system has a greater defence against cancer. In this respect 'A Cancer Therapy' by Max Gerson M.D. is an interesting read.

Candida: (see also below under Immune deficiency) Antibacterial agents present in Wrack seaweed have been shown in clinical research to make it effective against common food poisoning bacteria including the fungus *Candida albicans*; *Staphylococcus aureus*, *Streptococcus pyogenes*, and *E. coli*; and a bacterium associated with pneumonia. (109).

Seagreens® complex sulphated polysaccharides stimulate lymphocyte and interferon production and other anti-tumour activity; also the immune enhancing T- and B-cells, inhibiting viral



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pathogenesis. Recent research (2000), using a red algæ Dumontiaceæ has shown that these polysaccharides support the body's specific immune response to Herpes Simplex and Herpes Zoster viruses, helping to reduce or prevent the occurrence and severity of outbreaks. There was anecdotal evidence of marked improvement in cases of Epstein Barr and Candida. Two US patents were filed for clinical efficacy in the treatment of Herpes I & II. A useful inhibitory effect against AIDS virus infection can be expected from the special polysaccharides in wrack seaweed (63), which make up approximately half of total carbohydrate 600mg/g (see Table 2 below for a comprehensive nutritional profile).

“Seaweeds have exceptional value in the treatment of candida overgrowth. They contain selenium and (all the) other minerals necessary for rebuilding immunity; furthermore the rich iodine content is used by enzymes in the body to produce iodine-charged free radicals which deactivate yeasts. Before the advent of anti-fungal drugs, iodine was the standard medical treatment for yeasts. When candidiasis is complicated with tumours or cancers, then seaweed is of additional benefit. Salt should normally be restricted during candida overgrowth” (1 p36).

Its usefulness in mineral provision and salt replacement is well documented.

Cardiovascular diseases: (see also above under Blood pressure and below under Cholesterol) The polysaccharides in brown seaweed have been shown to offer several useful mechanisms in addressing coronary heart disease, cerebrovascular disorders, atherosclerosis, as well as cancerogenesis and cancer metastasis (see above under Cancer): the inhibition of smooth muscle cell proliferation (monoclonal hyperplasia) which is an important step in atherogenesis (68, 69, 72); the reduction of high blood sugar and triglyceride levels, and activation of enzymes involved in the beta-oxidation of fatty acids which can be useful in the prevention and treatment of hyperlipidemia (71); an inhibitory effect on the generation of thrombin (61); the hypertensive effect of its special range of polysaccharides including laminin; “hypotensive effects may be due to laminine

doxalate (114). The polysaccharides have been shown to ‘mimic’ heparin, exhibiting the same anticoagulant activity (65, 66, 67) and a higher antiproliferative activity (70). Its anticoagulant activity chiefly relates to the breakdown of fats in the blood, but Seagreens® should not be considered an alternative to heparin (a short term remedial drug) or warfarin (a long term maintenance drug) although it is entirely compatible with these and may assist their effectiveness. There are no contra-indications for using Seagreens® as there are, for example, with aspirin in conjunction with these drugs.

It was discovered that when stroke-prone rats were overfed salt, only those also fed seaweed powder did not have strokes; the seaweed was an antidote to excess sodium consumption (27). Several components of brown seaweeds have been shown to have cardiotoxic value. Fatty acids found in kelp stimulated heart muscle, while a histamine compound accelerated contractions of the atrium (histamine and iodine content of nekombu (a Japanese wrack) were 501mg/kg and 3200mg/kg respectively, indicating that 36% of the total iodine was in the salt form of histamine).

Researchers found an extract from *Undaria pinnatifida* seaweed increased the contractile force of the atria. Much of the research highlights the involvement of the polysaccharide fucoidan which may comprise 4% of brown seaweed polysaccharides (62, 72). It is believed in some quarters that the high intake of brown seaweed in the Japanese diet may be a factor in their relatively low incidence of heart disease and cancer death, although many other dietary norms pertain, absent in the West.

The largest scientific study of its kind, reported in February 2006, found that “People who eat 5 portions of fruit and vegetables a day are 26% less likely to suffer a stroke than those who only eat 3” (100).

Cholesterol: (see also above under Blood pressure and Cardiovascular diseases) Seagreens® reduce cholesterol largely due to the neutralizing action of their unique range of polysaccharides, and act as an antidote to excess sodium consumption. Arctic



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wrack has been found to reduce cholesterol in eggs and its comprehensive mineral content to have a balancing effect on blood and plasma.

The primary polysaccharide is alginic acid, a linear polymer of L-guluronic and D-mannuronic acid. Cholesterol lowering effects may be related to viscosity of gel and inhibiting cholesterol absorption. A purified carbohydrate product is extracted from various brown seaweeds like Seagreens®, called algin or sodium alginate, used widely in industrial processing as a binding agent. Orally, algin is used to lower serum cholesterol levels (114).

“Many Japanese reports show that ‘brown algal-sulfated polysaccharides’ have anticoagulant activity similar to heparin, a popular pharmaceutical anticoagulant. One assumption is that these (polysaccharides) clear the blood of fatty substances the same way heparin does. If you inject heparin after a fatty meal, it accelerates the disappearance of visible fats, reducing bad LDL cholesterol and raising good HDL type.”

Japanese researchers showed wakame to suppress the re-absorption of cholesterol in the liver and intestine, and hijiki (both closely related to Seagreens®) to lower serum cholesterol and improve fat metabolism (18). Research especially at Lund University in Sweden confirms the beneficial effect of Omega-3 on blood pressure and blood cholesterol levels (25).

A study completed in 2005 at Karolinska University Hospital and Linköping University, Sweden suggests that elevated concentrations of serum cholesterol is a risk factor for testicular cancer. In deaths among 44,864 men tracked from 1965 there was a positive correlation between serum cholesterol concentration and the incidence of testicular cancer (94).

Circulation: (see also below under Weight regulation) Subjects in uncontrolled weight regulation trials at the University of Pavia, Italy (1999) increased blood flow to the skin by as much as 45%, improved metabolism and blood mineralisation possibly leading to better circulation.

Dental nutrition: (see also below under Detoxification, and Oral hygiene) Seagreens® began co-operation with the Brompton Dental Clinic and in particular, Dr J. G. Levenson, in 1999. Dr Levenson was the Founder and past President of the British Society for Mercury-Free Dentistry; Dental Adviser & Executive Committee Member, Environmental Medicine Foundation. Seagreens® Food Capsules (and later Food Granules) were found to achieve excellent results in the pre- and post-operative detoxification of heavy metals including dental mercury from amalgam and in root canal work involving toxicity. The polysaccharides are also known to be effective against nickel, cadmium, lead, strontium and other environmental pollutants, and in oral hygiene. Patents were taken out in the US Patent Office in 1988 and 1989 (11) for the use of alginate (from seaweed polysaccharides) to deter and remove dental plaque. Several toothpastes contain *Ascophyllum* or *Carrageen* seaweeds for this reason. Seagreens® Food Granules, Culinary Ingredient, and Salad & Condiment products are all chewed in the mouth, have a significant component of the polysaccharides, natural antibacterial properties and assist the acid-alkaline balance. Especially the Salad & Table Condiment, like some of the dried farmed Japanese seaweeds available in bags from companies like Clearspring (www.clearspring.co.uk), may be chewed in the mouth straight from the pack and are good for oral hygiene. In Victorian times, children in coastal areas chewed wild Wrack seaweed like sweets, which must have done wonders for their teeth and gums!

Detoxification: Seagreens® are effective through 4 principal modes of action namely:

- 1 Cleansing of the digestive tract, blood, lymph, kidneys and improved metabolism of food (by a unique range of polysaccharides and pigments including chlorophyll, all the antioxidant vitamins and minerals);
- 2 Removal of toxic and heavy metals and radiation (by special polysaccharides, the complete range of amino acids and minerals);
- 3 Improving the alkaline-acid balance and the



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full metabolism of carbohydrates, proteins and fats, helping protect against acidosis - the most alkaline forming of all natural foods, over 75 times moreso than apples - (by the special polysaccharides and naturally chelated minerals, trace elements and compounds);

4 Providing the richest source of natural, stable, fully 'chelated' iodine (bound to protein ions) with all the micro-nutrients needed for its metabolism, like selenium. An essential food for the thyroid and hormonal system which in its turn regulates almost every bodily function.

Seagreens® arctic wild wrack seaweeds contain all the important 'detoxification' nutrients like zinc, magnesium, selenium, molybdenum and all the other minerals and trace elements, enzymes, amino-acids and essential fats. Dr Robert Gray regards wild wrack as an excellent mucotriptic herb (anti-mucous) to cleanse the lymphatic system, and to:

"loosen, soften or dissolve hardened, stagnant or impacted muroid in the body"... "It has been shown that a diet consisting solely of generous quantities of every known nutrient cannot maintain health. This is because whole foods contain many valuable nutrients not yet isolated or discovered by laboratory science. By taking supplements, we can only get the advantage of a fraction of what the body needs to maintain health" (113).

Polysaccharides in Seagreens® including mannuronic acid, laminarin and fucoidin, are the subject of research for anticancer and antitumour compounds. They have been shown to bind and remove barium, cadmium, lead and mercury (21). "...reduce absorption of strontium, barium, tin, cadmium, manganese, zinc, and mercury' (114). In the 1960s Japanese scientists showed that radioactive strontium in the gut is converted to an insoluble salt which is excreted. Nature published a report showing that wrack seaweed inhibits the body's absorption of radioactive strontium and cadmium by up to 7/8ths the dose received. It also removed Strontium 90 already absorbed through the gut wall and deposited in body tissues and bone. Other papers on this research (20, 22, 23). Mercury remains the largest ingredient in amalgam

dental fillings - at around 500mg per filling, as much as in a thermometer:

"a colossal amount of mercury in scientific terms...a teenager with 6 amalgam fillings has 6 mercury thermometers in her mouth" (79).

Following use at the Brompton Health & Dental Clinic in London throughout 2001, Seagreens® Food Capsules were approved by the President of the British Society for Mercury-Free Dentistry, the late Dr J. G. Levenson (28) and may be dispensed by member clinics and nutritional therapists for post-operative detoxification in amalgam extraction and for general purposes of detoxification. Trials have yet to be carried out but empirical evidence is good after more than five years in dental nutrition (95).

Dr Levenson's protocol: 3 capsules daily (1 with each meal) commencing 5 days before the first treatment, up to 6 capsules on the day/s of treatment and for at least 8 weeks following the completion of treatment, dropping to 3 - 4 capsules daily (1 - 2 morning and 1 - 2 evening) and finally to the normal daily intake of 2 capsules daily over at least the next 12 - 24 months. Seagreens® is entirely compatible with additional complementary herbs, drugs or supplements which may be used, particularly during the month surrounding the treatment/s, according to patient circumstances and test results.

"Alginate binds to all heavy metals including lead, mercury, cadmium, cobalt, copper and radium and should be consumed over at least a 4 month period to expedite removal of toxic substances stored in the body" - Dr L. Gordin, Cambridge, Massachusetts.

As long ago as 1996 the Canadian government recommended that children and pregnant women should not be given amalgam fillings. In 1999 the United States Public Health Service's Agency for Toxic Substances & Disease Registry stated that mercury passes through the placenta into the unborn brain, and a separate report stated that mercury passes to the baby in the mother's milk. They further confirmed that poisonous vapours



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from dental mercury go first to the brain and kidneys (79). Since the late 1999 the use of dental mercury in Sweden has not been subsidised and its use has almost ceased. An outright ban remains on the political agenda. In the USA in 2003 a Bill was before Congress to ban amalgam fillings within 5 years. Dr Levenson (President, British Society for Mercury Free Dentistry) has written a comprehensive account based on observations of more than 6000 patients (83) and the British Society for Mercury-Free Dentistry holds regular conferences to raise awareness of the issues and report the latest research.

There is a substantial and consistent body of international research, particularly Russian, on the stable curative effects of wild Wrack seaweed extracts in radiation sickness. Seagreens® was included in the diet of child victims of the Chernobyl disaster in 2003.

Diabetes: (See also Cardiovascular Diseases, Detoxification, Digestion, and Obesity) The growth of Type 2 diabetes is the kind linked to unhealthy diet and insufficient exercise.

“A child born in the USA in 2000 has a 1 in 3 chance of contracting diabetes in their lifetime; an African American has a 2 in 5 chance; a Latina 1 in 2. The condition is causing children to succumb to heart disease, blindness and kidney failure and is well on the way to reducing overall life expectancy in the USA. Diabetes costs the US an estimated \$92bn in medical expenses and a further \$40bn in indirect costs like lost productivity. The American Diabetes Association estimates the disease now accounts for 19% of all US health spending” (102).

Digestion: (see also below under Indigestion). Seagreens®’ remarkable nutritional profile is found to be helpful in patients with compromised digestion and metabolism. Their mucilaginous polysaccharides have a healing effect on damaged intestinal villi. Seagreens® are known to assist the survival of a beneficial intestinal flora and to improve the condition of the gut wall (1). Two mechanisms involved are thought to be the restoration of the fibroblast growth factor activity which stimulates repair of the epithelium, as well

as the mucosal properties of the polysaccharides.

It is well known that in order to metabolise any single nutrient (eg. a protein or carbohydrate) many other nutrients (eg. enzymes, co-enzymes, trace elements) are required for what is in effect, a very complex process. In the metabolism of a single meal, although the body can manufacture many of the nutrients it needs, this ‘manufacturing’ must also draw on a vast array of nutrition. The nutrients required which cannot be obtained from an ordinary diet are present in Seagreens®.

They help balance acidity being by far the most alkalizing of all natural foods. Their overall contribution is to help the body rebalance and regulate itself.

“They (seaweeds) contain soothing, mucilaginous gels such as algin, caragheenan, and agar, which specifically rejuvenate the lungs and gastrointestinal tract” (1). “They have a mucilaginous quality which makes them very soothing and healing for the damaged intestine” (4). “Large amounts of minerals...maintain the blood in an alkaline condition. Seaweeds are best for this” (4).

Inflammatory conditions of the alimentary tract involve elevated synthesis of the proinflammatory mediators like adhesion molecules, white cell infiltration of gastrointestinal mucosa and altered mucosal integrity. The therapeutic use of heparin has produced clinical remission in the majority of patients with inflammatory bowel disorder and special polysaccharides in brown seaweed have been shown to share many of the properties and modes of action of heparin. One of the mechanisms involved is the restoration of the fibroblast growth factor activity that stimulates repair of the epithelium. Another is their mucosal protective properties. Since gastrointestinal inflammation can cause the protective mucosal layer of glycosaminoglycans to alter, these polysaccharides are useful because they can be absorbed across the gastro-intestinal mucosa (78).

In 2006 scientists at the University of Newcastle upon Tyne demonstrated the value of seaweed polysaccharides, especially alginate, in the international battle against obesity, diabetes, heart



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disease and diseases such as bowel cancer.

The research paper showed that alginate proved to strengthen mucus, the body's natural protection of the gut wall, can slow digestion down, and can slow the uptake of nutrients in the body (112).

Hair and scalp: (see below under Scalp)

Heartburn: (see also below under Indigestion)

“For heartburn, grill some dried kombu (a Japanese seaweed closely related to Seagreens®) and then eat it” (15).

Heart disease: (see above under Blood, and Cardiovascular)

Helicobacter pylori / ulcer: (See also above under Antibacterial) Peptic ulcer of the stomach is most common in Blood Type O patients:

“Any blood type O who suffers from ulcers or wants to prevent them, should use wrack seaweed because it will make the ulcer-causing bacteria, H. pylori, slide off the stomach lining” (3).

The fucose component (of the seaweed) is known to act on H. pylori “much as dust would on a piece of adhesive tape: it clogs the suction cups on the bacteria, preventing it from attaching to the stomach” (3, p58). Seagreens® wild wrack seaweeds, all members of the order *Fucaceae*, or *Fucus*, are rich in fucose especially Seagreens® Food Capsules and Food Granules. Japanese scientists have isolated a definite anti-ulcer substance in seaweed which had antimicrobial activity against a long list of human disease-causing bacteria including E.coli, *Pseudomonas aeruginosa*, *Salmonella*, *Staphylococcus*, *Aspergillus*, *Fusarium* and *Shigella* (10).

Herpes: (See below under Immune deficiency)

Hyperactivity / ADHD: (see above under Autistic spectrum disorders and below under Detoxification) Seagreens® may have two useful roles to play in the management and treatment of this condition. The underlying problems within the gut, immune system and brain which are

related, may be substantially aided and improved by the regular daily input 2 Food Capsules or 1 gram of Food Granules not only because of their complete and non-allergenic balance of nutrients, but their significant natural component of the glyco-muco-polysaccharides which are about half of the carbohydrate content, in itself about half the seaweed. Secondly, in connection with the withdrawal of drug treatments like the common use of Ritalin. This is methylphenedate and although its mode of action and pathways are not entirely understood, it is assumed that it makes more available and possibly increases production of noradrenalin and through this, dopamine and dopamine reception. It is contraindicated in hyperthyroidism so its interference with the thyroid is recognised, and possibly the hormone and endocrine systems. It is also one of the ‘stimulant’ drugs and as such its decrease or removal may be made easier by simultaneous nutritional intervention to balance and strengthen the body’s own self-adjustment and healing. A significant daily input raised from 2 - 4 Food Capsules or from 1 - 2 grams (half a teaspoon) of Food Granules (or a mix of these) might be introduced before, during and after withdrawal of Ritalin returning to a normal daily intake depending upon the age and condition of the child after a prolonged period of some 3 - 4 weeks at the higher dose.

Hypothyroid / hyperthyroid: (see below under Thyroid and Iodine Deficiency)

IBS (Irritable Bowel Syndrome): (see above under Digestion).

Immune deficiency: (See also below under ME and above under Candida) Seagreens® complex sulphated polysaccharides stimulate lymphocyte and interferon production and other anti-tumour activity; also the immune enhancing T- and B-cells, inhibiting viral pathogenesis. Recent research (2000), using a red algæ *Dumontiaceae* has shown that these polysaccharides support the body’s specific immune response to Herpes Simplex and Herpes Zoster viruses, helping to reduce or prevent the occurrence and severity of outbreaks. There



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was anecdotal evidence of marked improvement in cases of Epstein Barr and Candida. Two US patents were filed for clinical efficacy in the treatment of Herpes I & II. A useful inhibitory effect against AIDS virus infection can be expected from the special polysaccharides in wrack seaweed (63), which make up approximately half of total carbohydrate 600mg/g (see Table 2 below for a comprehensive nutritional profile).

Indigestion: (see also above under Digestion). Chronic indigestion may indicate an underlying condition in which a food intolerance such as to yeast, gluten or wheat is often found to be a primary cause. There may be intolerance to certain kinds of protein also found in cereals and soya. Damage to the digestive tract may have resulted, manifesting as poor nutrient absorption, ulcerative colitis, irritable bowel syndrome (IBS) and general debility.

Seagreens® can play a useful role in therapy and rehabilitation, and for those suffering occasional acid indigestion from specific causes such as eating too late, exercise after eating, excessive acid-forming foods and drink, etc. The Food Capsules appear to be highly effective; also we have reports from consumers who have found the incidence of acid indigestion decreases with long term use of the capsules. Taken daily, Seagreens® original Food Capsules (and we suggest the Culinary Ingredient with meals) can be of benefit in 3 ways:

- They will clean, soothe and help to heal the digestive tract and the villi which aid the absorption of nutrients by the action of their unique range of polysaccharides.
 - They will directly aid the absorption and metabolism of nutrients from food by ensuring the daily presence of the full range of micronutrients which the body may otherwise be finding difficult to obtain or manufacture from the everyday diet.
 - They are highly alkaline-forming, and of all seaweeds, Seagreens® is the most alkaline-forming (see above under Alkalinity).
- Certain seaweeds including Seagreens® and their Japanese relative kombu significantly aid the digestion of carbohydrates and act against their

conversion to toxic acids. They have:

“the ability to soften the fibres of other foods...cooked with beans will not only tenderise them quicker but will improve their flavour, add valuable nutrients and increase the overall digestibility of the dish” (24).

Iodine deficiency: Worldwide some 200 million people are estimated to suffer under-active thyroid which at any age may disturb regulation in almost any tissue in the body. Seagreens® are an excellent source of natural, stable, chelated iodine together with the full balance of its complementary microminerals like selenium and the other related nutrients necessary for its metabolism. Within the thyroid iodine combines with other nutrients to produce triiodine (T3 - 3 atoms of iodine) and thyroxine (T4 - 4 atoms of iodine) (9). Artificial replacements of these thyroid hormones are available but ‘override’ the thyroid, rather than revitalising it. Regular intake of Seagreens® Food Capsules may help to regulate thyroid activity and hormone production generally. The naturally chelated iodine in Seagreens® Food Capsules is not excessive at 442µg per gram and surplus to bodily requirement may be excreted which is not the case with synthetic formulations*. World Health Organisation guidelines advise a safe maximum daily intake of 1000µg and the British Health Food Manufacturers Association advises that food supplements should not deliver more than 500µg per day. Common kelp seaweed is a less balanced source of iodine and none is certified for use in organic foods.

“In all species studied the tolerance is high relative to normal dietary iodine intakes, pointing to a wide margin of safety for this element” (12).

Seagreens® capsules are entirely free from additives or agents, and may be the only pure vegetable source on the market. They are approved by the Vegan Society. Market research prior to introducing Seagreens® Iodine Capsules in 2003 found a leading brand of (not organic) kelp tablet sold as “a natural source of iodine” and “suitable for vegans” contained 0.225mg (225µg) of iodine, 264mg of cellulose and calcium phosphate ‘fillers’, plus



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11mg of silica, magnesium stearate and stearic acid added for manufacturing convenience. No product of organic quality was available.

Whilst soil mineral deficiency may even exclude iodine altogether (a micro- or trace mineral), the widespread use of (unchelated) iodine in animal feed, milk and dairy products have made these the main sources of iodine in the British diet, disadvantaging vegetarians. Whilst government statistics estimate an average adult daily iodine intake of 200µg, average daily intakes of 80µg may not be uncommon in vegans (13). Seagreens® may also have a regulating effect in hyperthyroid.

“In the last 50 years, runner beans have lost 100% of their sodium, watercress 90% its copper, broccoli 75% its calcium. Levels of other important minerals including magnesium, iron, phosphorous and potassium have also plummeted” (14).

Several papers provide a comprehensive review of the research on this subject (53-59). Iodine has been shown to reduce radioactive iodine-131 absorbed by the thyroid. In Norway pharmacies are obliged to maintain stocks to supply their local population in case of nuclear accident.

*Seagreens® original blended wild seaweed Food Capsules typically provide 442µg per gram (per recommended daily use of 2 x 500mg capsules - 221µg per 500mg capsule). Alternatively, where economy is a prime consideration, Seagreens® Everyday Iodine Capsules are a less expensive single 500mg vegetable capsule for daily use delivering 350µg iodine per day but with a less significant input of the other related nutrients. The difference between these capsules is that the Iodine Capsule contains a single wild Wrack seaweed with a high iodine content, where the Food Capsule is a deliberately low-iodine mix of Seagreens® seaweeds allowing all the other nutrients to be ingested at higher levels.

Metabolism: Various modes of action combine to assist in metabolism. Most evidently, Seagreens® contains all the nutrients - including many that will be missing in a normal meal. It is well known

that in order to metabolise any single nutrient (for example a protein or a carbohydrate), many other nutrients (for example enzymes, co-enzymes, trace elements) are required for what is, in effect, a highly complex process. In the metabolism of a single meal, this picture can be hugely complex, and although the body can manufacture many of the nutrients it needs, this ‘manufacturing’ also must draw on a vast array of nutrition. Many of the nutrients required can be obtained only from the diet, and many are missing. Many are missing from the soil that all land food is grown in, and very few foods have anything other than a narrow selection of nutrients, which is why a little of many different foods is better than a single food, for example, rice, which results in malnutrition, however much is available. By ensuring the daily presence of all the nutrients - especially the rarer micronutrients - Seagreens® provides an ideal ‘foundation’ for effective metabolism at the level of the gut.

In addition to this comprehensive balance of nutrients - the outstanding nutritional profile of Seagreens® - the ‘synergistic’ effect has to do with the fact that many food nutrients will only ‘release’ their full potency and value to the body in the presence of other specific nutrients without which they will pass from the body partially or wholly unused. For example, to make use of protein, requires (among many other nutrients) vitamin B6. But B6 itself requires (among others) vitamin B2 and magnesium. But then again, too little folic acid would hinder our absorption of thiamine (vitamin B1), which would impair our ability to absorb carbohydrate. All of these are micronutrients, and most must be obtained from the diet. The net effect in many cases, is that Seagreens® enables the body to obtain from the other food being eaten, more of the very nutrients which themselves may only be present in tiny amounts in the seaweed. A research example from horticulture may make the point more simply: although the seaweed is relatively low in phosphorus, in trials it enabled plants to absorb greater amounts of phosphorus from the soil - precisely because other nutrients in the seaweed allow the plant to do so.



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In the human body, this is why deficiencies of a known nutrient - for example iron or iodine - are sometimes remedied not by administering that nutrient alone, but by ensuring the presence of other nutrients which the body needs to metabolise the 'deficient' nutrient which is actually already present in the diet.

Metabolism includes not only the body's uptake, but actual utilisation of nutrients and this is influenced by the health of the bacteria in the gut and the health of the gut wall. Here the actual transition of nutrients into the lymph and via the circulatory system to the cells of the body, takes place.

Seagreens®' special polysaccharides are known to assist the production of beneficial intestinal bacteria and the condition of the gut wall (17, 63).

Horticultural research has also repeatedly shown this seaweed to directly stimulate bacterial activity in the soil, particularly those such as fluorescent pseudomonads which are also antagonistic to fungal pathogens, so help minimise the risk of soil borne disease. It should be understood that in this respect the soil is to the plant, much the same as the stomach is to the human body.

There is also good scientific evidence for Seagreens®' immune enhancing, anti-viral and anti-microbial properties (63, 10). Hence this type of seaweed is considered to have "exceptional value" in the natural treatment of candida overgrowth (Candidiasis) (1, 24) in the intestine.

There are also numerous mechanisms, well supported by scientific research, by which Seagreens® improves circulation and the condition of the blood, in its turn assisting the distribution and uptake of nutrients by the cells - not least because the seaweed provides an almost ideal balance of all the mineral salts in much the same proportions as the body tries to maintain in its own plasma.

ME: "For the past 2 years I have had ME/CFS/PVFS and by introducing Seagreens® to my regular food intake I have noticed an improvement in my health which has revealed the efficacy of the Food Capsules" (2).

Mercury toxicity: (See above under Amalgam fillings and Detoxification)

Metabolism and metabolic disorders: (See above under Detoxification and below under Obesity, and Weight Regulation) The regulation of any metabolic disorder from mineral imbalance to obesity, and the gradual cleansing of the whole system from digestion to lymph and circulation is Seagreens® most important contribution. In addition its support for the gut flora and balanced nutritional input at both the gut and cellular level makes for the gradual but significant results which are highlighted in most reports.

Obesity: (See also under Cancer, Detoxification, Diabetes, Digestion, Metabolism and metabolic disorders, and Weight regulation) The body with obesity is a body in metabolic crisis with chronic inflammation and in many cases a symptom of fundamental nutritional imbalance. The comprehensive and balanced nutritional composition of the seaweed with its known effects on metabolic disorder and broad representation of all the micronutrients not generally available in other foods or supplements, presents the practitioner with an ideal natural resource. As whole nations put on weight, the links between diet, digestion, circulation and obesity are clearer to the consumer than ever. Many factors including loss of nutrients in food and soil, a concomitant increase of fats, sugars, modified starches and other artificial inputs to food and livestock, sedentary consumerist lifestyle and several generations for whom responsibility for health has shifted from individual to 'welfare' state, are coming home to roost in a pandemic in which more than half of British school-aged children are expected to be obese by 2020 (101).

A comparative study based on government tables published in 1940 and 2002 has revealed that the iron recorded in the average rump steak fell by



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55% over that period. Calcium is down 4% and magnesium 7%. Milk has lost 21% of its calcium and 62% of its iron, while cheddar cheese has lost 38% of its magnesium, 9% of its calcium and 47% of its iron. Changes in measuring the composition of food could account for some of the decrease, as could changes in the way food is stored and transported, but the Food Commission, an independent consumer watchdog, thinks the impact of intensive farming should be investigated (96).

“One of the key arguments is that today’s agriculture does not allow soil to enrich itself,” said its director Dr Tim Lobstein, “but depends on chemical fertilisers that don’t replace the wide variety of nutrients which plants and humans need” (96).

A 2006 article in Positive Health magazine (111) reported that “there are now more overweight than under-nourished people in the world”. An average adult in the heavily industrialised world accumulates 300 - 500 different chemicals in their body. This article reviewed extensive scientific research and quoted Dr Baillie-Hamilton’s dietary protocol to chelate and detoxify, of which she said “but the ingredients required are not generally found in any quantity or quality in your typical Western diet”. That is, high doses of antioxidants, B vitamins, trace minerals, essential fatty acids, soluble fibre, amino acids. Dr Baillie-Hamilton also emphasises that for the detoxification to be effective, the correct alkaline pH balance is essential. Seagreens® is the most alkalizing of all natural foods, and contains a natural balance of all of these ingredients. Used at a high daily intake for periods of up to 6 months some significant results might be achieved without side effects. Seagreens® began its own research programme 2007 with a London University hopefully leading to clinical trials. In the meantime there is no substitute for everyday clinical experience and practitioners’ own findings on these urgent matters is welcomed.

Oral hygiene and dental health: (see also above under Dental nutrition, and Detoxification) A product called ‘Plaque Off’ was launched in 2006 in which the active ingredient is the same seaweed

as Seagreens® *Ascophyllum* in our Food Granules and Culinary Ingredient. Within this type of seaweed, the important nutrients are the mucopolysaccharides, special carbohydrates unique to seaweeds. These are also an important component in Seagreens® wild *Pelvetia*, the seaweed used in our chewable Salad & Table Condiment product which can be chewed straight from the packet, used at the table instead of salt, or soaked in cold water for 6 - 8 minutes and added to salads and warm vegetables.

Pregnancy: Thousands of young mothers-to-be are putting their children’s health at risk as a result of their unhealthy diets and ‘faddy’ weight loss regimes such as high-protein, low-carbohydrate regimes. A study of 12,000 women has shown that 4 in 10 young women have such poor diets that when they become pregnant their children are deprived of essential nutrients in the womb. The health of an unborn baby can be affected long before conception, because foetuses do not merely rely on the food consumed by the mother in pregnancy, but draw on nutrients stored in their bodies over preceding months. Poor diets before and during pregnancy can leave children susceptible to a range of diseases in later life including diabetes and heart disease (90). Seagreens® can be included in the daily diet before, during and after pregnancy as an ideal foundational food - safe to use while breast-feeding - providing a complete and balanced nutrient profile including the micronutrients like folic acid and selenium which are often taken as synthetic or formulated supplements. Daily inclusion may be increased to 3 Food Capsules during the final 4 months of pregnancy and for 2 to 3 months following as the body and especially the skin, hormonal and immune systems recuperate.

Respiratory conditions: The action of Seagreens®’ unique range of polysaccharides (which Pitchford refers to as ‘mucilaginous gels’) may be especially complementary in herbal therapies.

“Seaweeds...contain soothing, mucilaginous gels...which specifically rejuvenate the lungs and gastrointestinal tract” (1).



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Research conducted at the Russian State National Research Centre for Preventive Medicine in the early 1990s, demonstrated a 29.5% decrease in the incidence of bronchitis and other respiratory illness among 158 subjects given dried powder of wild wrack seaweed over 6 months (against 174 controls) with no side effect. The control group presented a 3.6% increase in the same illnesses.

Salt replacement: (See also above under Blood and Cardiovascular) Researchers discovered that when stroke-prone rats were overfed salt, only those also fed seaweed powder did not have strokes; the seaweed was an antidote to excess sodium consumption (27). A 2003 study in Japan which followed the dietary habits of 40,000 men and women found that the risk of stomach cancer in men with a low-salt intake of 4g to 6g daily was 1 in 1,000 per year, but double in men consuming 12g to 15g per day. The risk for women on a low-salt diet was 1 in 2,000 per year but on a high level diet increased to 1 in 1,300 (93). Although sodium intake can be reduced in cooking and at the table, almost three quarters of dietary sodium is already added to manufactured foods (75) so diligent shopping is the real solution.

Some leading salt brands and ingredients compared to pure Seagreens® wild seaweeds

<u>Brand</u>	<u>Sodium</u>	<u>Potassium</u>
LoSalt	13%	66%
Ruthmol	0.1%	24%
Table salt	39%	0%
Solo	16%	41%
Seagreens® Wrack	3.5%	2.5%
Seagreens® Dulse	1.75%	7.8%

Although there are now several artificial 'low sodium' salts (around 15% sodium), they all add potassium to compensate. Ruthmol also has high potassium and contains lactose, maize starch & ammonium chloride. Saxa also produce a potassium enriched 'low-sodium' salt. People with liver and kidney problems need to be aware of drugs which may alter the body's ability to

metabolise potassium. Patients using Ace inhibitors should avoid potassium as well as sodium as these drugs cause retention of potassium. Medications like diuretics, some of which cause the loss of potassium, may be in part countered by the use of Seagreens® in which potassium is present at about 25mg per gram. Seagreens® potassium/sodium ratio is almost the same as that in the human body and it contains an ideal balance of all the other mineral salts like calcium, magnesium, etc (24).

Only Seagreens® are Certified for use in organic foods to Soil Association and Demeter (biodynamic) Standards.

A biodynamic bakery (Artisan Bread, Kent tel 01227-771881, www.artisanbread.ltd.uk) has completely replaced salt with Seagreens® in all its recipes. Seagreens Ltd is working with other manufacturers in the UK and overseas to develop new products containing Seagreens® as a certified branded ingredient.

Scalp: (see also below under Skin) A number of our customers have found relief from conditions of the hair and scalp using one or a combination of Seagreens® Food Capsules and/or Food Granules, and our recently developed liquid Seagreens® Purée. For example (by permission) in 2005 a female customer was prescribed drugs which it is believed caused among other symptoms, severe hair loss and infection of the scalp. At the worst point she was losing 400 - 800 hairs each time she shampooed. After less than a month she was losing hair in double figures and the infection was evidently in retreat with markedly less itching. After less than 30 shampoos using the Purée she was losing a better than normal 2 or 3 hairs per shampoo. She remained free of any infection. The experiences of male and female customers who have been using the Food Capsules for several years is that it reduces or helps reduce hair loss and improves its condition, supports these findings.

For the scalp - twice per week only

- Mix 1 and a 1/2 teaspoons of Seagreens® Purée diluted* in 1 cupful of lukewarm mineral water
- Apply to dry hair, drizzling over the hair using



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the fingers to work it into the scalp

- Leave on the head for 30 minutes, then rinse out the Purée using a mild natural shampoo with no chemical or artificial additives or strong fragrances
- Before the end of this 30 minutes, prepare a pot of concentrated nettle tea and leave to cool until approximately body temperature
- Pour the nettle tea over the scalp and leave for a few moments before towelling dry (use an old towel which may be slightly stained). Do not rinse out - the tea does not smell.
- We suggest no interim shampooing
- The nettle tea alone can be applied and left in the hair more often than twice a week if this feels appropriate

*the Purée must be diluted before use on the skin since the pH is slightly acid at about 4: this is not harmful but may be uncomfortable after 10-15 minutes and tends to 'dry out' the skin

We wish to make it clear that our product and suggested protocol is not constitute a treatment or cure or even a herbal remedy. The product is a pure 'whole food' and I merely wish to relay this particular experience we have to date with this remarkable seaweed. Use of the Purée which is not yet available in stores is entirely at the customer's risk.

Skin: (see also above under Scalp, Circulation, and Burns, and below under Weight regulation)

Wrack seaweed is a traditional feed input to horses and mink to improve the bloom of coat. People with dry skin may notice a difference after about 6 months on the Food Capsules. Some people report colour returning to grey hair. Increased blood flow to the epidermis was reported as high as 45% in weight regulation trials at the University of Pavia, Italy (1999). Given wrack seaweed over a 6 month period female subjects lost an average 30% of subcutaneous fat and an average 5% on waist and hip measurements. Arctic wild wrack is so nutritionally complex and complete, that many factors may be involved in improving skin condition including metabolic regulation, improved digestion and the 'detoxing' effect of its unique range of polysaccharides. These are the "mucilaginous gels" referred to by Pitchford (1 pp178, 307, 310). The topical application of

Seagreens® Microgranules mixed with warm water as poultice or compress, may be helpful in the healing of eczema, psoriasis, rash, burns, sunburn, cuts and grazes and other skin conditions.

Special diets: (See above under Allergies and intolerances)

Thyroid: (See also above under Iodine deficiency) Seagreens® contain all the nutrients required to 'feed the thyroid'. Although iodine is often thought to be the critical factor, equally the balance of micronutrients involved in the delicate metabolic processes involved in feeding the thyroid are all important. Other nutrient deficiencies may be the cause of many thyroid problems, including both hypo- and hyper-thyroid conditions. Nutrients critical to thyroid health are iodine, selenium, tyrosine, zinc, copper, vitamins A, B2, B3, B6 and C - all of which are in an ideal natural balance in Seagreens®. Deficiencies in the trace elements selenium and copper (and many others) are common especially where farming practices do not replenish soil levels of the micronutrients. Some biodynamic and organic food has been shown to contain better nutrient levels but this can only be where soil has been improved.

The thyroid affects every cell in the body, regulating cell metabolism like a thermostat. Low function doesn't produce enough active hormones so the system becomes inert. Thyroid hormone synthesis and secretion is regulated via a negative feedback control system involving the hypothalamus, anterior pituitary and the thyroid gland. Thyrotrophin-releasing hormone (TRH) is secreted by the hypothalamus. TRH stimulates the anterior pituitary to secrete TSH. TSH acts on the thyroid to stimulate the release of T3 and T4 (thyroxin). T3 and T4 act negatively on the anterior pituitary to suppress the release of TSH. The conversion of T4 to T3 depends on adequate amounts of selenium amongst other minerals. Selenium levels can easily be determined by measuring hair samples or RBC levels. We understand from correspondence that patients have been able to reduce or stop thyroxin medication after 3 - 6 months on Seagreens® at 2-3 Food



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Capsules per day (or 1 - 1.5g Food Granules).

Because the thyroid regulates the burning of calories, weight tends to go up as thyroid function goes down, and vice versa. This may not always be the case because other factors are often involved.

Dr Peter D'Adamo says: "I have also found that (wrack seaweed) is very effective as an aid to weight control for Type Os - especially those who suffer thyroid dysfunctions. The fucose in bladderwrack (fucus species) seems to normalize the sluggish metabolic rate and produce weight loss" (3).

Ulcers: (See above under Helicobacter)

Vegan and vegetarian diets: (See also above under Iodine Deficiency). Seagreens® are also a natural source of the B-vitamin group including bioavailable vitamin B12. Recent research using the Lactobacillus delbruekii microbiological assay method clarified the bioavailability of algal vitamin B12, where true vitamin B12 was found to be the predominant cobalamide. Feeding the algæ to B12-deficient rats significantly improved their vitamin B12 status. The results suggest that algal vitamin B12 is a bioavailable source for mammals. In spirulina the pseudovitamin B12 predominated. This is an inactive corrinoid and is not suitable for use as a vitamin B12 source, especially for vegetarians (91). Seagreens® also improves the metabolism and absorption of all the dietary nutrients on a daily basis, especially where malabsorption is a result of gut dysbiosis or nutritional imbalance (1, 81) - see . Seagreens® has a significantly more balanced and complete nutritional profile than other algæ particularly kelp as well as the green and red seaweeds.

Weight regulation: (See also above under Detoxification) Research on wild wrack (fucus in un-controlled trials, University of Pavia, Italy, 1998/99) claimed significant reductions in hip and thigh measurements and subcutaneous fat and increased blood flow to the epidermis in over 80% of female trial subjects. Claims for weight regulation to 'normal' levels, rather than weight loss are supported by broad consumer experience in

the UK. A number of factors including thyroid/hormone regulation, improved digestion and metabolism and Seagreens® detoxifying special polysaccharides may be involved.

"Seaweeds are useful in weight-loss programmes and for lowering cholesterol and fat in the blood. Marine plants have a 'sinking' quality and hence direct the energy of the body lower and more internally. They contain soothing, mucilaginous gels such as algin, caragheenan, and agar, which specifically rejuvenate the lungs and gastrointestinal tract" (1). "So concentrated in minerals that they are normally used as a supplementary item in recipes to provide a mineral foundation for better utilization of protein and all other nutrients" (1 p107).

Dr Peter D'Adamo says: "I have also found that (wrack seaweed) is very effective as an aid to weight control for Type Os - especially those who suffer thyroid dysfunctions. The fucose in bladderwrack (fucus species) seems to normalize the sluggish metabolic rate and produce weight loss" (3).

Research reported in The Ecologist magazine (110) points to environmental pollutants being stored in body fat cells. Weight loss without proper detoxification leads to these chemicals being released into the bloodstream. As blood levels rise, levels of essential thyroid hormones necessary to maintain efficient metabolism, fall dramatically - called 'adaptive thermogenesis'. A concomitant reduction in muscle oxidative enzymes which determine how efficiently the muscles use energy, results in energy being stored as fat, creating a vicious cycle - weight loss / rising blood contaminants / loss of oxidative enzymes / increase in fat. The point is that Seagreens® may have 3 uses here:

- to help clean out the pollutants
- to help restore the hormone balance and thyroid
- to help in weight regulation

Wheat intolerance: (See above under Detoxification, Helicobacter, IBS, Indigestion) The antioxidant E vitamin is naturally present in Seagreens® (approx. 0.23mg/g) with the complete set of isomers otherwise found only in seed oils like wheat germ. Seagreens® are entirely wheat and gluten free, and are beneficial for the



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intestinal tract, both for their physical properties (eg. the soothing effect of the polysaccharides) and their nutritional properties (eg. their beneficial effect on the gut flora and remarkable balance of all the nutrients).

Working out: Seagreens® contain all the micronutrients, vitamins and minerals, trace elements and natural compounds which are lost or can become imbalanced due to heavy physical exercise. It is best to take them before and after working out or any serious physical training.

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Professional bodies

Approved by Demeter and the Soil Association to standards for wild food products which satisfy UK and EC biodynamic/organic standards and Regulation 2092/91:

“Sustainedly wild harvested and produced to Demeter (Biodynamic Agricultural Association) and Soil Association Standards for use in organic foods”.

Debio Certification, Norway: NO 919 543 175.

Soil Association Certification, UK: I4788.

Demeter Approval & Registration, UK: 398.

Approved by UK Vegan and Vegetarian Societies.

Approved by the President of the British Society for Mercury Free Dentistry for pre- and post-operative detoxification in amalgam extraction.

Approved by ION and BANT Nutritionists, BHMA and NIMH Medical Herbalists, and NHS Dieticians.

Approved by the British Association of Holistic

Nutrition & Medicine.

Capsules are Kosher Circle U Certified under the supervision of the Kashruth Division of the Union of Orthodox Jewish Congregations of America. Approved by the Coeliac Society.

Quality standards and British Herbal Pharmacopoeia

Seagreens® wild Arctic Wrack seaweeds are not the progeny of genetically modified organisms or of products derived from the same. Seagreens® are not known to be capable of contamination by genetically modified organisms. The products are harvested, processed, and stored in accordance with organic production and processing practices as defined within the UK Soil Association Organic Standards. They are not irradiated. Production quality control systems operate to TQS9000 corresponding to ISO9001/ISO9002. Seagreens® are wild harvested and processed to Demeter (Biodynamic Agricultural Association) and Soil Association Standards for use in Biodynamic and Organic Foods and Farming Systems. Seagreens® wild Arctic Ascophyllum seaweed complies with the specification of the British Herbal Pharmacopoeia for Ascophylli thallus (Fucaceae). The products are not irradiated at any point in their production.

EFFICACY AND INTAKE

Seagreens® Food Capsules and Seagreens® Food Granules - a unique granular mix of 3 wrack seaweeds *ascophyllum nodosum*, *fucus spiralis*, and *pelvetia canaliculata*.

Seagreens® should not be seen as a supplement to food but as an underlying dietary foundation for permanent daily use at minimal intake, to restore and maintain a comprehensive nutritional profile in the body over time, a more balanced and better regulated system, and a ‘clean’ bill of health. In most cases the benefits accrue over months and years during which the capsules or granules, or combined use of both appear to help regulate energy, metabolism, digestion and weight, cleanse, detoxify and help maintain the acid-alkaline balance and homeostasis.



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Where health is severely compromised the effects may be seen in a matter of weeks. In more normal cases, efficacy is proportional to the term of use rather than the amount consumed. Most consumers report optimum benefit being obtained between 12 and 24 months and thereafter being maintained often by the minimal intake of 2 capsules or 1/4 teaspoon of the granules (1g) per day.

The Food Capsules and Food Granules are a unique blend of Seagreens® wild Wrack seaweeds and safe for permanent daily use, including during pregnancy and the contents of one capsule in infant feed. In cases of severe debility and gut dysbiosis, Seagreens® have been readily ingested and in some cases the only nutritional supplement not rejected by the patient.

Seagreens® 100% vegetable Food Capsules contain a unique mixture of 3 varieties of arctic wild wrack from our own harvest. This achieves an optimum nutritional profile without the excessive iodine often associated with seaweeds such as common kelp (see Table 1 below), which is an obstacle to its efficacy as a significant nutritional input. Any specific nutrients in which for various reasons a subject is known to be deficient, may still require periodic supplementation. No natural food - even 'Organically' grown - has such a comprehensive, balanced range of nutrients. Seagreens® should not be confused with fresh water algæ (like spirulina, blue green algæ and chlorella) which are not ocean vegetables, though spirulina may grow in partly saline water. These have widely differing nutrient profiles similar to other land vegetables which also vary between different commercial brands (64). Nor should Seagreens® be confused with 'kelp' (commonly laminaria seaweed) which for an equivalent daily intake contains excessive iodine (see Table 1 below).

"Modern science confirms seaweed as one of Nature's all-round pharmaceutical miracles that can accomplish everything from warding off and treating several types of cancer, lowering blood cholesterol and blood pressure, thinning the blood, preventing ulcers, killing bacteria, even curing constipation" (10).

Daily intake

For balanced nutritional input in the general population, 2 capsules per day (each morning or 1 morning, 1 evening, preferably with food) with a maximum recommended daily intake of 3 capsules (1000mg) each morning or split morning, midday and evening with food, on a permanent basis, except where the subject has regular physical exertion, is pregnant or breastfeeding, recuperating from illness, or where health or immunity is exceptionally compromised, or where specific treatment is being given, when up to 4 capsules may be deemed appropriate for relatively short periods of time. For heavy metals and radiation detoxification up to 6 capsules daily (eg. 2 with each meal) for at least 8 weeks, and thereafter 2 - 3 capsules daily for up to 24 months. The dosage in pre-and post-operative dental amalgam extraction was agreed in 2002 with Dr J. Levenson, President of the British Society for Mercury-Free Dentistry (see 'BSMFD Dosage' under Detoxification, above). Where the diet is sufficiently varied, contains other good quality vegetables, and the general health of the subject is good, 2 capsules daily is an adequate maintenance intake or 1 capsule if Seagreens® Food Granules (Culinary Ingredient) are also being used. In children under 10 years of age, 1 capsule each morning, preferably with food. In infants from 6 months to 4 years, the powder from half of one capsule may be stirred into infant feed or mixed with any suitable food, especially when high in carbohydrates, such as baked beans, since this will aid digestion.

*"...best consumed before and/or during meals"
- G. Michanek, University of Göteborg, Sweden.*

Generally experience shows that prolonged daily use rather than higher daily intake is the key to efficacy. It also indicates that the relationship and balance between the nutrients in Seagreens®, and their entirely natural quality, may explain their efficacy rather than the actual amount of each that is present. In all cases, experience shows that although debility may be addressed within weeks, genuine change and improvement accrues from long term use, and usually becomes very apparent



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to the subject from between 6 and 12 months when underlying causes rather than symptoms begin to be addressed.

Table 1: Seagreens® Food Capsules and Seagreens® Food Granules - typical nutritional profile 1 gram (2 Food Capsules or 1/4 teaspoon Food Granules)

Protein 75mg • **Carbohydrate / fibre** 700mg (of which the non-starch polysaccharides Algin 230mg, Fucose and Fucoidan 90mg, Mannitol 65mg, Methylpentosans, Laminarin 40mg, Mannuronic acid 270mg) and essential fatty acids EFAs • **Vitamins** A (antioxidant carotenoids beta carotene, and fucoxanthin, violaxanthin and chlorophyll) 178µg, B group (including B12 Cyanocobalamin 0.004µg, Bc Folic and Folinic acid 0.6µg, B1 Thiamine 0.3µg, B2 Riboflavin 7.5µg, Niacin (anti-pellagra) 20µg, Pantothenic acid, B6 Pyridoxin, Choline) 8.9µg, C (antioxidant) 1.25mg, D (Cholecalciferol) 0.01µg, E (antioxidant) including the complete set of isomers 0.23mg, H (Biotin) 0.30µg and K (Menadione) 10µg • **Minerals** Calcium 20mg, Chlorine 35mg, Magnesium 7mg, Nitrogen 10.5mg, Phosphorus 1.5mg, Potassium 25mg, Sodium 35mg, Sulphur 30mg • **Trace elements include** Antimony trace, Boron 0.06mg, Cobalt 5.4µg, Copper trace, Fluorine 0.2mg, Germanium trace, Gold trace, Iodine 399µg, Iridium trace, Iron 575µg, Lithium trace, Manganese 0.03mg, Molybdenum 0.65µg, Platinum trace, Rubidium trace, Selenium 0.15µg, Silicon 1mg, Silver trace, Tellurium trace, Titanium trace, Vanadium 2.3µg and Zinc 0.13mg • **Amino acids** Histidine trace, Isoleucine 0.53mg, Leucine 5.3mg, Lysine 2.78mg, Methionine 0.68mg, Phenylalanine 0.83mg, Threonine 2.33mg, Tryptophan trace, Valine 2.63mg, Alanine 4.57mg, Arginine 11.17mg, Aspartic acid 4.88mg, Cysteine

0.90mg, Glutamic acid 5.18mg, Glycine 3.90mg, Proline 3mg, Serine 2.25mg, Tyrosine 1.05mg • **Betaines** Glycine Betaine trace, Gamma Amino Butyric Acid Betaine trace, Delta Amino Valeric Acid Betaine trace, TML (Laminine) trace, L-Carnitine trace, Trigonelline trace; enzymes and valuable compounds which cannot be formulated such as the phenolic compounds including free phloroglucinol, fucophorethols, and phlorotannin derivatives. 1g = 1000mg = 1000000µg

Table 2: Typical Nutritional Values Per 100g

Protein	7.5g
Carbohydrate	55g
Sugars	5g
Fat	4g
Saturates	2g
Fibre	5g
Sodium	3.5g
Moisture	12-15%
Energy	309 kcal (1280 kJ)

Table 3: Typical comparative iodine levels

The British Health Food Manufacturers' Association limits iodine supplementation to a safe maximum of 500µg per day.

We introduced our Everyday Iodine Capsules (see this table below) in 2000 after requests from Vegans and Vegetarians for a pure organic quality food providing high iodine with no additives or extractions.

<u>1 g (1000mg)</u>	<u>iodine</u>
Seagreens® Food Capsules x 2 or	442µg
Seagreens® Food Granules x 1g	
Common kelp or bladderwrack	700 - 1200µg
<u>1/2g (500mg)</u>	
Seagreens® Everyday Iodine Capsule x 1	350µg

Sources of nutritional and bacteriological analysis

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