Seagreens®

Feed the Foundation of Health

www.seagreens.co.uk

Seagreens® Certified Ingredients

a Presentation for the Food Industry

In partnership with

geelawson

more than an ingredients company

- Why seaweed, which seaweed?
- What's in it, what is it not?
- What is human food quality?
- What does Seagreens® do?
- What's the shelf life?
- What uses in nutrition and food?
- What needs to go on my label?
- Lead time, bag size, MOQ, price?

"Seagreens: Britain's leading seaweed supplier"

– Organic & Natural Business Magazine, October 2009

"Our research has found that as well as maintaining the taste of the food, the seaweed granules appear to preserve it, thereby potentially lengthening its shelf life. We tested the granules for their microbial content and any external pollutants, and see no reason that the product would not be safe to consume within the regulatory definition of food safety for human consumption"

– Dr Andrew Fairclough, Centre for Food Innovation, Sheffield Hallam University (Seagreens research 2007-11) and Dr Philip Barlow, Scientific and Technical Advisor, Food Innovation Project, 2008

"Whilst the land has been losing its nutrients for millions of years (accelerated by intensive farming), the rain does not recycle them" (74)

- (74) H. C. A. Vogel, *The Nature Doctor, (Manual of Traditional and Complementary Medicine)*, Mainstream Publishing Company, Edinburgh, 50th Edition, 1989.

(Seagreens® Healthcare Summary)

What Seagreens® is not ...

- Horticultural/animal feed grade
- Deep water kelp (*Laminaria spp.*)
- Japanese culinary seaweeds
- Fresh water algae – blue green, spirulina, chlorella
- Formulated green superfoods

Seagreens are neither 'green' nor 'red' but 'brown seaweed' ...

Wrack seaweed family

Olive green pigmentation, more scientific research than other genera, the most broadly nutritious of seaweeds

- *ascophyllum nodosum* = knotted or whistle wrack
- *pelvetia canaliculata* = channelled wrack
- *fucus spiralis* = spiral wrack
- *fucus vesiculosus* = bladderwrack
- *fucus serratus* = toothed wrack

Seagreens® Hebridean Wrack seaweeds

Olive green pigmentation, more scientific research than other genera, outstanding nutritional balance

(brown seaweed of the genera *Ascophyllum*, species *Nodosum*, class *Algae* of the order *Fucaceae*, or *Fucus*)

- *Ascophyllum nodosum*
  = knotted wrack = whistle wrack

Asco Large Granules

Asco Medium Granules

Asco Fine Granules

Seagreens® Hebridean Wrack seaweeds

- *Pelvetia canaliculata* = channelled wrack

Pelvetia Pièces

Seagreens® Hebridean Wrack seaweeds

- *Fucus spiralis* = spiral wrack

Fucus Pièces

Seagreens®

GB Organic Certification 6

Seagreens® – an ideal vegetable source

- Calcium 20mg
- Iron 575µg
- Magnesium 7000µg
- Copper trace
- Zinc 0.13mg
- Selenium 0.15µg
- Iodine 700µg

– per gram

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 (1280kJ)

Seagreens® wild *Ascophyllum nodosum*

- typical nutritional profile

► **Protein**

► **Carbohydrate / fibre** including important non-starch polysaccharides and essential fatty acids

► **Vitamins** A (antioxidant carotenoids beta carotene, and fucoxanthin, violaxanthin and chlorophyll), B group (including B12 Cyanocobalamin, Folic and Folinic acid, B1 Thiamine, B2 Riboflavin, Niacin (anti-pellagra), Pantothenic acid, B6 Pyridoxin, Choline), C (antioxidant), D (Calciferol), E (antioxidant) including the complete set of isomers tocopherols and trienols, H (Biotin) and K (Menadione)

► **Minerals** Calcium, Chlorine, Magnesium, Nitrogen, Phosphorus, Potassium, Sodium, Sulphur

► **Trace elements** Antimony, Boron, Cobalt, Copper, Fluorine, Germanium, Gold, Iodine, Iridium, Iron, Lithium, Manganese, Molybdenum, Platinum, Rubidium, Selenium, Silicon, Silver, Tellurium, Titanium, Vanadium and Zinc

► **Amino acids** A full profile of essential and non-essential amino acids

"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)

FORTUNATELY...

Seagreens is the most comprehensive and consistent natural whole food source of minerals and trace elements.

- (97) D. Thomas, research compilation for *'Overfed and Undernourished',* London Conference on Obesity, April 2005.

(Seagreens® Healthcare Summary)

Fruit, veg and seaweed comparison

COMPARE

Seagreens in a loaf of bread has approximately the same amount of vitamin B2 as 100g of blackberries or broccoli

Nutrient density in most nutrient dense species in class

Nutrient	Fruit	Vegetable	Seaweed
per 100g	raw blackberry	boiled broccoli	dried *Ascophyllum*
Vitamin B1	0.02 mg	0.05 mg	0.03 mg
Vitamin B2	0.05 mg	0.05 mg	0.75 mg
Vitamin B3	0.50 mg	0.70 mg	2.00 mg
Folate	34.00 mcg	64.00 mcg	60.00 mcg
Vitamin C	15.00 mg	44.00 mg	125.00 mg
Vitamin D	0.00 mcg	0.00 mcg	1.00 mcg
Potassium	160.00 mg	170.00 mg	2500.00 mg
Calcium	41.00 mg	40.00 mg	2000.00 mg
Magnesium	23.00 mg	13.00 mg	700.00 mg
Iron	0.07 mg	1.00 mg	57.50 mg
Zinc	0.20 mg	0.40 mg	13.00 mg
Selenium	trace	trace	15.00 mcg

- Food Standards Agency 2008, Seagreens Healthcare Summary 2009

Dried seaweed contains: 15 times the vitamin B2, 3-4 times the vitamin B3, 3-8 times the vitamin C. 15 times the potassium, 50 times the calcium, 50 times the iron, 30 times the magnesium, an element in which a large proportion of the population is deficient and in which deficiencies are well correlated to high blood pressure. Many elements present in seaweed are not present in fruit and vegetables, namely B12, D and K, trace elements such as selenium and zinc, and polysaccharides such as algin, fucoidan, laminarin and mannuronic acid.

Seagreens® human food quality standards

- **Plant selection** - cleanliness, nutritional profile, age, single species
- **Harvesting** - area selection, monitoring, environment, consistency
- **Transport** - cleanliness, contamination, speed, proximity, environment
- **Processing** - drying speed, temperature, particle size, detection
- **Regulatory** - HACCP, GMP, BRC, MSDS, Food Safety, Analytical Certs
- **EU and USA** - Biodynamic and Organic Standards, Codex, Pharmacopeia
- **Niche certification** - Irradiation, GMO, Vegan, Kosher, Halal
- **Brand** - corporate policies and assurances
- **Research** - Seaweed Health Foundation

Crown Estate Business Award 2010

Dinah Nicols, Crown Estate board member, Roger Bright, Chief Executive of the Crown Estate, Malcolm Macrae of Hebridean Seaweed Company, Sir Stuart Hamson, Crown Estate Chairman, and Rob Hastings, Director of the Marine Estate.

Typical applications

- Bread and baked goods
- Comminuted meat
- Soups
- Ready meals
- Dietetic foods
- Specialist and snack foods

Seagreens® salt replacement

"The potential for the use of Seagreens® wild wrack seaweed as a bacteriostat and its effect on shelf-life"

- A. C. Fairclough, D. E. Cliffe, Centre for Food Innovation, Sheffield Hallam University, 2008

"Wild Wrack (Ascophyllum nodosum) a replacement for salt (as sodium chloride) in bread products"

- A. C. Fairclough, K. Mahadevan, Centre for Food Innovation and Food and Nutrition Group, Sheffield Hallam University, 2009

Organoleptic studies, taste and texture in conventional bread manufacturing using a randomized, blind 22 consumer taste panel

- A. C. Fairclough, Centre for Food Innovation, Sheffield Hallam University, 2010 (peer reviewed for publication in the International Journal of Food Science & Technology, September 2010)

Advanced antioxidant, antimicrobial and rheometric studies in progress and scheduled, Britain and Denmark, 2010-11 Preservative effect against artificial compounds (Brand Partner study series) 2011

"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)

- (27) Y. Yamori et al., *Dietary Prevention of Stroke and Its Mechanisms in Stroke-Prone Spontaneously Hypertensive Rats Preventive Effect of Dietary Fibre and Palmitloleic Acid,* Journal Hypertens 4(3):S449-S452, 1986.

(Seagreens® Healthcare Summary)

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

Brand	Sodium	Potassium
LoSalt	13%	66%
Ruthmol	0.1%	24%
Table salt	39%	0%
Solo	16%	41%
Seagreens® Wrack	3.5%	2.5%

(Seagreens® Healthcare Summary)

"...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)

- (93) Japanese study reported in the British Journal of Cancer (The Week, Health & Science section, Issue 443, 17.01.04).

(Seagreens® Healthcare Summary)

Seagreens® cardiovascular benefits

Effect on blood cholesterol levels

► seaweed dietary polysaccharide in high fat diets decreases uptake of fats, reduces plasma cholesterol

(Nishide et al, 1993, Kimura et al, 1996, Jiminez-Escrig, Sanchez-Muniz, 2000)

Effect on blood glucose levels

► seaweed dietary polysaccharide reduces rise in blood peak glucose (-31%) and plasma insulin (-42%) in Diabetes Type II and healthy patients

(Torsdottir et al, 1991, Wolf et al, 2002)

Fucoidans have anticoagulant activity

► seaweed polysaccharide has natural blood anticoagulant effect similar to drug heparin

(Colliec et al, 1991, Albuquerque et al, 2004, Silva et al, 2005, Pomin et al, 2005)

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; and it has 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.

(Seagreens® Healthcare Summary)

Seagreens® benefits in obesity

"Seagreens® Ascophyllum nodosum enriched bread is acceptable to consumers"

-A. C. Hall, A. C. Fairclough, K. Mahadevan, J. R. Paxman, Centre for Food Innovation, Sheffield Hallam University, 2010

"Effect of Seagreens® on nutrient uptake and subsequent human appetite and feeding behaviour"

- A. C. Hall, Centre for Food Innovation, Sheffield Hallam University, 2010

Winner of the 2010 Alpro Foundation Award for Masters in the UK at the 11th International Nutrition and Health Conference, London

Seagreens® digestive benefits

Effect on rate of digestion

► Whole food seaweed inhibits proteases which may reduce the heightened glycaemic index of mixed meals common in Western diet, by reducing glycaemic load from amino acids

(Brownlee et al, 2005)

Effect on colonic microflora, mucosa and luminal toxicity

► It is likely seaweed can bind damaging agents from the GI lumen, reduces colonic putrefaction, heal and protect the gut lining, and alleviate histopathological symptoms (vis. in ulcerative colitis) affording a significant level of colonic protection

(Nishayama et al, 1991)

Seagreens is involved in research on the prebiotic effects of seaweed polysaccharides current at Newcastle, Sheffield, Reading, and other universities. Encouraging beneficial flora and reducing inflammation in the gut lining enhances interaction between the GI and immune systems through mucosa associated lymphoid tissue (MALT) which is critical to immunity

Seagreens® in detoxification

Polysaccharides in Seagreens® including mannuronic acid, laminarin and fucoidin have been shown to bind and remove barium, cadmium, lead and mercury. (21)

- (21) S. C. Skoryna, Y. Tanaka et al., Prevention of Gastrointestinal Absorption of Excessive Trace Elements Intake, Trace Substances in Environmental Health VI, Symposium, (D. D. Hemphill, Ed.), University of Missouri, Columbia, 1973.

(Seagreens® Healthcare Summary)

1 Cleanses digestive tract, blood, lymph, kidneys and improved metabolism of food (polysaccharides and pigments including chlorophyll, antioxidant vitamins and minerals)

2 Removes toxic and heavy metals and radiation (polysaccharides, amino acids and minerals)

3 Improves the alkaline-acid balance and full metabolism of carbohydrates, proteins and fats - the most alkaline forming of all natural foods, over 75 times moreso than apples - (polysaccharides. naturally chelated minerals, trace elements and compounds)

4 Provides stable chelated iodine (bound to protein ions) with all the micro-nutrients needed for its metabolism

5 All the antioxidants and 'detoxification' minerals

Special needs diets

- Meat and dairy alternatives
- Thyroid and hormonal disorders
- Salt reduction and replacement
- Detoxification and weight control
- Pregnancy, lactation and recuperation
- No allergenic substances

(Seagreens® Healthcare Summary)

Health Claims

► **EFSA Health Claim Submissions for *Ascophyllum nodosum***

Control of weight - ID 2226

Constipation / intestinal health - ID 2227

Structure and function of skin and mucous membranes - ID 2396

Action on fats (*Ascophyllum nodosum* water extract) - ID 2757

► **EFSA Health Claim Submissions for *Fucus vesiculosis***

Weight control / satiety - ID 3707

Weight management - ID 3708

Digestion / transit - ID 2768

Anti-oestrogene - ID 2542

Constipation / intestinal health - ID 2260

Thyroid function and production of hormone, energy metabolism - ID 2259

"Many of my patients are on restricted diets, and they often complain that the food is 'bland' and lacking flavour. By using the Seagreens® condiments they will still be able to enjoy a flavoursome diet."

- Helen Heap, Nutritionist, Women's Nutritional Advisory Service (dietary advisory service specializing in PMS, the Menopause, and IBS), England, April 1999

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IDRIS FRANCIS
PETERSFIELD, HAMPSHIRE

Salt substitute

Sir: Being concerned about the amount of salt I put in when making a loaf, I discovered "seaweed culinary ingredient" at my local health-food store. Using the same amount of this instead of salt, I find that the loaf rises as well if not better. As well as containing all the minerals, trace elements and amino acids our bodies need, it contains 3.5 per cent sodium, against 40 per cent in salt. Besides the bread and rolls I make, I use it regularly in cooking and have it on the table instead of salt.

ELIZABETH HALE
GLOUCESTER

Independent-minded

Sir: The independence of Ghana in 1957 was hardly "the beginning of the end of British colonialism", as Paul Vallely suggests (2 March), seeing that India and Pakistan had gone in 1947, and Eire exited from the Commonwealth a year later. Harold Macmillan, who had to make his "wind of change" speech twice before a moribund media noticed its significance, knew exactly where it had begun – Ireland, where it is still blowing.

PADDY McGARVEY
CAMBRIDGE


The Mineral Salt
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ABO

Artisan Bread Original

BART®

The Art of Good Food

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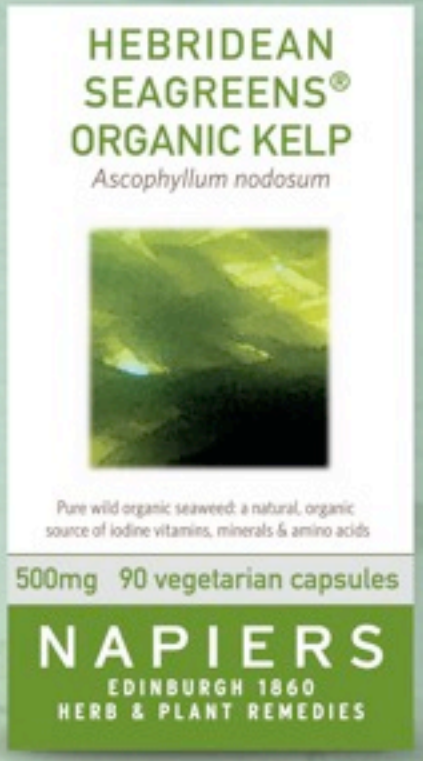
Camphill Communities

NAPIERS
EDINBURGH 1860
HERB & PLANT REMEDIES



Seagreens Brand Partners

NEAL'S YARD REMEDIES
COVENT GARDEN

viridian

Seagreens Brand Partners

pukka

The Natural and Organic Awards 2010 WINNER Best Organic Food Product

The Natural and Organic Awards 2010 FINALIST Best New VMS Product

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