



*Unlocking The Secrets Of Nature*

## **AUTISM SPECTRUM DISORDER**

### **WHY SEAGREENS® MAY PROVE BENEFICIAL FOR AUTISTIC SPECTRUM DISORDERS?**

Seagreens® is the distinction given to several varieties of wild arctic seaweeds, harvested among the remote Lofoten Islands. Seagreens® Arctic Wrack ranks among the world's finest 'whole' foods, having a uniquely comprehensive balance of virtually all the nutrients, in proportions ideal for inclusion in the human diet.

Over the past few years Seagreens® have earned an interested following among consumers and healthcare professionals. Regular, long term dietary inclusion is reputed among other things to help regulate metabolism and energy, stimulate the immune system, soothe the digestive tract, cleanse the blood, protect against bacterial and viral infection, maintain healthy cellular function, and support the proper functioning of the endocrine glands especially the thyroid (11) all of which are problematical in autistics.

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:

- 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

Heavy metals, amino acids and minerals It is now widely known that autistic children have increased levels of cadmium, mercury, aluminium, arsenic and lead to name but a few of the common toxic metals. At the same time, they may be deficient in some important minerals like zinc and iron yet have unusually high levels of others like copper. They appear to have problems transporting minerals in and out of cells and in binding and removing the toxic metals. They may be unable to produce the appropriate protein metal transporters or metallothioneins (MTs), which in turn may be due to difficulties in metabolising amino acids critical in the production of MTs (2). An American study of 503 autistic children last year found 99% with metallothionein deficiency (3).

Last year Seagreens® Food Capsules were tested and approved by the British Society for Mercury Free Dentistry for post-operative detoxification in amalgam extraction (4). Detoxification is thought to be effected through 3 principal modes of action:

1 Binding and removal of toxic metals and radiation including barium, cadmium, cobalt, lead, mercury and strontium by special 'seaweed' polysaccharides, amino acids and minerals (5, 6, 7, 8);

2 Cleansing of the digestive tract, blood, lymph, and kidneys by the polysaccharides, several pigments including chlorophyll, and the seaweed's antioxidant vitamins and minerals (9);

3 Improved metabolism of carbohydrates, proteins and fats by the special polysaccharides and naturally chelated minerals, trace elements and compounds; improved acid-alkaline balance (10).

Whilst Seagreens® themselves contain all the naturally occurring minerals and trace elements, including traces of the heavy metals, there is nevertheless a net extraction of these elements from the body through a variety of mechanisms. The tiny amount of arsenic in Seagreens®, for example, (0.0116mg) is in a form not absorbed by the body. Strontium is not the radioactive kind, but the same as is found naturally with calcium in milk. A marine biologist, Sonia Surey-Gent explains: "It may seem strange to be singing the praises of seaweed as a valuable source of minerals, then saying how it can be used to remove metals from the body. This is the paradox of a natural system, working both ways at the same time, removing imbalances, restoring things to the way they should be. Something that no modern wonder drug has ever managed to achieve" (13).

In addition to the metal binding properties of the polysaccharides, Seagreens® also provide a balance of all the amino acids necessary for the production of the metal transporting metallothionines, including cysteine. In the case of the ubiquitous MT hæmoglobin, cysteine accounts for as much as 30% of its structure (2). Cysteine and methionine have additional importance as sulphur-containing amino acids. The body produces most of its requirement for sulphate itself, since relatively little is available from food. Methionine with tyrosine also produces the important neurotransmitters serotonin and norepineprine.

Children with ASDs show impaired sulphation which means not only that they are deficient in this 'major' mineral, but that they cannot effectively detoxify many naturally-occurring phenolic compounds or phenol-containing pharmaceuticals in the liver and intestine - for example catecholamine neurotransmitters, steroids including oestrogens and progesterone, bile acids, and many phenolic drugs (14).

## **THYROID DISORDERS AND HYPOTHYROID**

Thyroid disorders, and particularly (underactive) hypo-thyroid have been found in many children with ASDs. Dr Kellman of the Centre for Progressive Medicine in New York has said that in his experience 90% of medical problems of both mother and child result from a lack of proper testing of the thyroid. "Once damage to the thyroid takes place it affects all the other organs - starting with digestion and absorption. Toxins start accumulating in the system. You can have an array of symptoms: heart disease and its complications, high homocysteine levels, poor circulation, weight gain/loss, no appetite or bingeing, bloating, fluid retention, skin problems, aching joints, low blood pressure, high cholesterol, low libido, hair loss, and sensitivity to cold" (1).

So long as it is capable of functioning, the thyroid can be regulated with the necessary nutrients including the mineral iodine, the amino acid tyrosine and if necessary desiccated thyroid concentrate or glandular (1).

Wrack seaweed is the finest natural source of stable, fully chelated iodine (bound to protein) and in Seagreens® Food Capsules a unique blend of arctic wrack varieties has been used to provide an optimum nutritional profile without the excessive iodine found in some other seaweeds like common kelp which can have over twice the proportion of iodine. This is important since the most significant health benefits accrue gradually over many months and even years of daily intake, making a higher iodine intake unsustainable and possibly detrimental (12).

### **DYSFUNCTIONAL DIGESTION AND GUT DYSBIOSIS**

Dr Campbell-McBride (Autism File issue 9) described the gut wall with its microbial flora as 'the right hand' of the immune system, so that "if the bacterial layer is damaged or worse than that, abnormal, then your immune system is trying to function with its right hand chopped off". All the published literature on ASDs suggests that abnormal bacterial colonization of the gut occurs and a very recent joint US-UK study which investigated the flora in 200 American children with ASDs, revealed unusual patterns of overgrowth of Clostridia species and Candida albicans (14).

Seagreens® remarkable nutritional profile may prove to be a considerable aid to compromised digestion and metabolism. Their mucilaginous polysaccharides have a healing effect on damaged intestinal villi (16, 17). They combat acidosis particularly from poorly digested carbohydrate and protein, being by far the most alkalizing of all natural foods: over 75 times more so than apples (10). Their overall contribution is to help the body cleanse, rebalance and regulate itself and maintain homeostasis.

Japanese scientists have isolated a definite anti-ulcer substance in seaweed which has antimicrobial activity against a long list of human disease-causing bacteria including E.coli, Pseudomonas aeruginosa, Salmonella, Staphylococcus, Aspergillus, Fusarium and Shigella (20).

"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" (19).

The therapeutic use of heparin has produced clinical remission in the majority of patients with inflammatory bowel disorder and special polysaccharides in the wrack seaweeds 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 GI mucosa (18).

### **COMPROMISED IMMUNITY AND CANDIDA**

ASDs can make children more susceptible to allergies and poor at eradicating viral, fungal, bacterial and parasitic pathogens, with increases in gram-negative bacteria, parasites and candida. Seagreens® complex sulphated polysaccharides stimulate lymphocyte and interferon production and the immune enhancing T- and B-cells, inhibiting viral pathogenesis. Researchers in 2000, showed that the special polysaccharides in seaweed 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 is 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 (15), which in Seagreens® make up approximately half of the total carbohydrate content of 600mg/g.

"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" (16).

Though they come from the ocean, Seagreens® are very low in sodium, having only 3.5% against 40% in salt and even 13-15% in the new artificial 'low-sodium' salts.

Russian research completed in 1993 at the Technical Medical Centre of Vladivostok concluded that wrack seaweed should be recommended to improve the function of the immune system.

### **DISTURBED FATTY ACID METABOLISM AND ELECTROLYTE BALANCE**

Among ASDs an overproduction of cytokines produced by the cells of the immune system has been observed. Cytokines can behave either as immune system regulators, or if themselves unregulated, they can induce pain, fever, inflammation and metabolic dysfunction (21). The production and bioactivity of cytokines are modulated by various compounds derived from essential fatty acids (EFAs).

Whilst the EFAs in Seagreens® alone may not provide an adequate supplementary level to help regulate cytokine production (see The Autism File, issue 6, p9), research has shown that the special polysaccharides in wrack seaweed reduce high blood sugar and triglyceride levels, and activate enzymes involved in the beta-oxidation of fatty acids which had beneficial effects in the prevention and treatment of hyperlipidemia (22).

Arctic wrack has been found to reduce cholesterol in eggs and its comprehensive mineral content to have a balancing effect on blood and cellular plasma. In Japanese research with wrack seaweed the polysaccharides demonstrated an anticoagulant activity similar to the anticoagulant drug heparin. One assumption is that these polysaccharides clear the blood of fatty substances in the same way as heparin. If heparin is injected after a fatty meal, it accelerates the disappearance of visible fats, reducing the level of bad LDL cholesterol and raising that of the 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 (23).

### **SKIN, CIRCULATION AND FREE RADICALS**

Many Seagreens® consumers of both sexes and all ages report improved skin condition particularly where the skin was previously dry and peeling. The verification of such anecdotal evidence is borne out by the long use of wrack seaweed in horses where it is widely known to improve the bloom of coat and the condition of hooves. For similar reasons it has been used for many years by mink farmers.

Research on wild wrack (fucus in un-controlled trials, University of Pavia, Italy, 1998/99) showed increased blood flow to the epidermis in over 80% of female trial subjects. Seagreens® wrack is rich in fucose especially the Fucus vesiculosus component of Seagreens® Food Capsules.

Children with ASDs exhibit excessive levels of free radical damage. Seagreens® contain all the antioxidant vitamins and minerals.

We do hope you will want to be associated with this study group and look forward to receiving your completed questionnaires.

## **INFORMATION AND PRODUCTS**

Seagreens Limited is Europe's only ocean-to-table seaweed producer  
Certified to Soil Association Organic Standards, approved by the British Vegan and Vegetarian Societies, the British Society for Mercury Free Dentistry, and the Coeliac Society.

**For further information or to purchase Seagreens® products contact: Sole USA Distributor / > Lenhardt Matz Managing Director, Sea-Health Imports Limited, PO Drawer 1384 Avon, CT. Tel:413.789.2871 Fax: 413.786.2480  
Email: [Info@sea-health.com](mailto:Info@sea-health.com) Retail website: [www.sea-health.com](http://www.sea-health.com)**

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