ALPHABETICAL GUIDE DIVINITÁ™
FOOD ADD & HEALTHCARE

Description 4
Introduction 4
Harvesting 4
Consumer products briefing 5
Useful definitions 6
Key consumer issues 7
Diet and the nutritional value of food 7
Micronutrients in an ageing population 10
Breadth and balance of seaweed nutrients 10
Position of seaweed in the diet 14
Multiple uses in dietary balance and therapy 15
Alkalinity 17
Allergies and intolerances 17
- Meat and dairy alternatives 17
- Thyroid and hormonal disorders 18
- Salt reduction and replacement 18
- Detoxification and weight control 18
- Pregnancy, lactation and recuperation 18

Alzheimer's, dementia and memory loss 19
Amalgam fillings 19
Antibacterial, antibiotic and antiviral 20
- Antibacterial 20
- Antibiotic 20
- Antiviral 20

Autistic spectrum disorders 21
Blood pressure 23
Blood types 24
Burns 25
Cancer 26
Candida 28
Cardiovascular 29
Cholesterol 31
Circulation 32

Degenerative diseases 32
Dementia 32
Dental nutrition 32
Depression 33
Detoxification 33
Heavy Metals 34
Radiation Sickness 35
Detox Therapies 35
Diabetes 36
Digestion 37
Eczema 38
Hair and scalp 39
Heartburn 40
Heart disease 41
Helicobacter pylori / ulcer 41
Herpes 41
HIV 41
Hyperactivity / ADHD 41
Hypothyroid / hyperthyroid 42
IBS (Irritable Bowel Syndrome) 42
Immune system / deficiency 42
Indigestion 43
Inflammation modulation 44
Iodine and iodine deficiency 44
Malaria 47
Meningitis 47
ME 47
Mercury toxicity 48
Metabolism and metabolic disorders 48
Obesity 50
Oral hygiene and dental health 52
Osteoporosis 52
Pregnancy 53
Respiratory conditions 54
Salt replacement 54
Scalp 56
Skin 56

Special diets 57
Thyroid and iodine-deficiency 57
Ulcers 64
Vegan and vegetarian diets 64
Weight regulation 64
Wheat intolerance 66
Efficacy and intake 66
A 'foundation food' 67
DIVINITÁ™ distinctive nutritional profile 68
Seaweed in dietary balance 68
Daily intake 70
Nutritional profile 71
RESEARCH REFERENCES 71

DESCRIPTION

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

There are no known contra-indications or allergenic components.

All DIVINITÁ™ products are 100% wild seaweed free of contaminants, toxic metals and microbial pathogens.

INTRODUCTION

DIVINITÁ™ products have been developed to provide a convenient and complete dietary foundation for everyday use in the general population. Medical and dental practitioners are also using them with reported success in specific health problems.

Current information is presented below. We produce only pure wholefood products of the finest quality, from our own sustainable harvesting of wild Arctic wrack seaweeds which we call DIVINITÁ™.

They are of particular interest in nutrition because they provide a natural, comprehensive balance of macro and micronutrients with no excessive components. DIVINITÁ™ are approved throughout the EU and the USA in line with Biodynamic and Organic Standards.

HARVESTING

We currently harvest three closely related species of wild Arctic wrack seaweeds: Ascophyllum (whistle wrack), Fucus (spiral wrack), and Pelvetia (channel wrack).

These distinctive Arctic varieties are more nutrient dense than more southerly varieties, for example common Atlantic bladderwrack or (Japanese) wakame.
DIVINITÁ™ are relatively shallow water seaweeds (the opposite of, for example 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 most plants over 4 years old), and extreme cold during winter.

Only fresh, living wild plants are harvested, cleaned, air-dried and immediately cracked, milled, micronized 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. Harvesting is sustainable, allowing the cut plants to grow again, and is carried out each summer among hundreds of islands in the remote Lofoten archipelago, a vast conservation wilderness stretching many miles off the Lapland coast of Norway.

Fish farming is prohibited; only light industry is tightly controlled, and sea quality is independently monitored by the Norwegian government.

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

A similar sentiment is expressed by Dee Atkinson, Medical Herbalist and co-owner of Napiers, Britain's oldest herbal apothecary based in Edinburgh:

"Herbs have a synergistic effect, and the action of a combination of herbs is often more than the sum of the action of the individual herbs, and this is certainly the case with these (traditional herb formulations)"

It is the same with DIVINITÁ™ - their combination of nutrients in such a naturally comprehensive balance has a value far beyond any sum of the individual nutrients. Moreover, even a single species is incapable of artificial replication or formulation. We also mix our seaweeds, as one might mix different herbs, and they do seem to have a remarkable efficacy.

"Tests have shown that effects beyond those expected from the components (of the seaweed) can be obtained. This strongly indicates that the composition and texture of the seaweed meal offers some extra benefits" - Professor Arne Jensen, Institute of Marine Biology, University of Tronheim, 4th March 1991.

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

"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".

USEFUL DEFINITIONS

Essential nutrients: those which must be obtained from the diet because the human body cannot make it at all, or in sufficient quantity, to meet its needs for normal human metabolism and reproduction: most commonly some amino acids, fats, vitamins and minerals.

Micronutrients and trace elements: nutrients required in minute amounts such as some vitamins, and minerals like selenium (up to 200µg per day) rather than in larger amounts like the essential mineral calcium (up to 1.5 g per day). Some nutrients like selenium become toxic in larger quantities. At least 90 minerals in the soil are known to be essential.

"On the basis of his thoughts about the evolution of the importance of (mineral) elements to life, Shaw (150) made the following predictions: Vanadium will become a well-established trace element. Nickel will be found to play a role in a nutritionally significant co-ordination compound probably associated with an enzyme. Chromium will be similarly implicated. He also thought that the neglected element, Titanium, might soon be recognized as essential to the life of plants and animals. Aluminum, Silicon and especially Arsenic will be assigned hitherto unsuspected roles in living organisms, and Rubidium and Lithium merited further investigation. Based upon the findings since 1970, many of Shaw's predictions may become realities".

Micro-alg®: Spirulina, chlorella, both of which are blue-green alg®, quite different from seaweed. Micro-alg® grow n the surface of fresh water and have a nutritional profile akin to land vegetables (they do not grow in the ocean). Some, like 'Klamath' blue green alg®, are harvested in lakes, but the vast majority are farmed in enormous water-filled tanks, particularly in China and South-East Asia. Their nutritional profiles vary widely, largely depending on the quality and nutritional content of the water. In DIVINITÁ™ research no two brands were found to be alike. They do not present the broad micronutrient profile of seaweed.

Nutrition: the sum of all the processes involved in taking in nutrients, assimilating and utilizing them.

"Delve beneath the surface of the word nutrition and you suddenly realize you are dealing with the materials for the maintenance of life. Without adequate nutrition, we die. With nutrition, we shape our own physical and mental characteristics in a constant cycle of decay and renewal. This process is embodied in the maxim "we are what we eat...nutrition is now the most important method of managing my health. It is a discipline which forms the platform for all other contributory factors to my well-being; factors such as drug therapy, physiotherapy, exercise and of course, common sense...nutrition is like my own resistance force. It makes my body as inhospitable as possible for Parkinson's to coexist with the rightful inhabitants of my brain".

KEY CONSUMER ISSUES

Quote of 2008 - Best Advice

"Eat food. Not too much. Mostly plants. And don't eat anything your great-grandmother wouldn't recognize as food"

Food writer Michael Pollan in 'In Defense of Food', 2008 in which he pilloried nutritional science for fostering the idea that food is nothing more than the sum of its nutrients, spreading confusion and dietary hypochondria; and the $36 billion food industry that processes real food into "edible food-like substances".

DIET AND THE NUTRITIONAL VALUE OF FOOD

"Collectively there has been an average 19% loss in magnesium, a 29% loss in calcium, a 37% loss in iron, and a really alarming 62% loss in copper (iron and copper being the only trace elements analyzed for in 1940)"

Mineral and trace element changes in Britain in 72 foods analyzed annually between 1940 and 2002 from research by D. E. Thomas, DC, MRNT (2007) based on McCance & Widdowson, The Composition of Foods, 6 Editions, pub. Royal Society of Chemistry and the Ministry of Agriculture, Fisheries and Food (MAFF) including fruit and vegetables, meat and meat products, cheeses and dairy products.

The nutritional value of our food is in steep decline. A comparative study based on government tables published annually between 1940 to 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 fertilizers that don't replace the wide variety of nutrients which plants and humans need"

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.

"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".

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 better natural source than DIVINITÁ™. It is salutary to recall that the benefits of many micronutrients including those of over half the currently known trace elements were unrecognized 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.

"In EU 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 (e.g. ready meals, sweets, crisps, salty snacks, takeaways) assume the same position in the brain as essential fatty acids".

Cynicism and lack of courage and integrity among business managers is also widely responsible. In 2007, The Guardian (UK national newspaper) found that many popular food brands contain significantly more sugar than they did 10 or even 20 years ago.

"Investigators compared the nutritional content of a dozen leading consumer brands and found that 9 showed an increase in calories, sugar, or saturated fat. According to their labels, Kellogg's Rice Krispies contain 36 more calories per 100g now than in 1983 - a rise of 10%. Haagen-Dazs Belgian Chocolate Ice Cream contains 16% more calories and 26% more fat than in 1994.

Jordans Original Crunchy Bars co9ntain 16% more calories than in 1986. In many cases, the change has occurred because, in response to health concerns over salt, manufacturers have removed some of the salt from their products and made up to the resulting loss of flavor by adding sugar and fats".

And then there are media-hungry celebrities and the greedy exploitative types which feed on them and through them on gullible consumers in the general population.

"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 fetuses 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".

Malnutrition, obesity, diabetes, heart disease and so many other health conditions are no longer the prerogative of states or social groups.

"Micronutrient malnutrition is a widespread problem throughout the world and has both health and economic consequences. The ultimate is increased mortality but other outcomes include blindness, poor cognitive development, reduced growth, lower worker productivity, higher morbidity and adverse pregnancy outcomes. Since the early 1980s,

an immense amount of effort and resources have gone into identifying the extent and severity of micronutrient deficiencies in developing countries".

The UN Standing Committee on Nutrition has recognized a new type of malnutrition which can be categorized as multiple micronutrient depletion, and this has been termed Type B malnutrition. Even where food can be grown the food is deficient in essential nutrients. "The overweight are just as malnourished as the starving, and nutritional programs in poor countries need to target rising obesity alongside hunger. We need a new definition of malnutrition because food availability is not really the issue. The quality of the food is the problem".

MICRONUTRIENTS IN AN AGEING POPULATION

Ageing influences the requirement for micronutrients and despite lower energy requirements, dietary density of micronutrients must remain high. There is evidence of a greater need for vitamins B12, B6 and folate in older people owing to their reduction in absorption. Deficiencies in these micronutrients may impair cognitive function, immunity and stamina and may contribute to increased rick of megaloblastic anemia and heart disease.
Although the body's requirement for iron is lowest in old age, increased risk of iron deficiency anemia may signal chronic blood loss from ulcers, reduced iron absorption due to lower stomach acid secretion, or overuse of medicines like aspirin that cause blood loss from the gastrointestinal tract.

BREADTH AND BALANCE OF SEAWEED NUTRIENTS

Whilst the land has been losing its nutrients for millions of years (accelerated by intensive farming), and the rain does not recycle them , 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 utter integrity and regard for all our relationships, is one of DIVINITÁ™ principal objectives.

"Marine plants by themselves form the very basis for all other forms of life to exist or continue to survive" - T. V. Desikachery, a leading seaweed scientist

Of all seaweeds, the 'Brown' alg® are the most nutritious, and of these the 'wrack' seaweeds have the broadest balance of nutrients, and among these, due to their unique Arctic habitat and evolution, DIVINITÁ™ Arctic wrack varieties are widely considered to be outstanding. These Norwegian seaweeds have been the subject of more research in

the past 50 years than any other. For example, the balance of mineral salts bears remarkable similarity to that in our own cellular fluid.

"Seaweed is the most nutritious form of vegetation on this planet...it contains almost the whole alphabet of nutrients".

DIVINITÁ™ contain a unique balance of all the minerals and trace elements of particular value when it is considered "necessary that we consume some 20 different vegetables in the proper proportions, and that these vegetables have been grown in soil that is sufficiently rich in nutrients and free from the many different chemical products now in common use".

"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".
Even among seaweeds, DIVINITÁ™ brown wrack varieties 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.

"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".

To understand the importance of 'ocean nutrition' it is helpful to understand a little of the origin of life and the part that ocean nutrients played in the evolution of our bodily systems. Even today it is this broad balance of nutrients (still found in this wild seaweed) which enables us to achieve 'nutritional balance' and 'homeostasis' - balance of the whole system.

Table (153) Trace elements in sea water (micrograms per litre)

Nutrient Essential	In Sea µg/L	Possibly In Sea Essential	µg/L
Arsenic	3	Aluminum	1200
Boron	4600	Bromine	65000
Chromium	2	Cadmium	0.03
Cobalt	0.1	Flourine	1300
Copper	10	Lead	4
Iodine	50	Lithium	100
Iron	3.4	Rubidium	120
Manganese	1	Strontium	8000
Molybdenum	14	Tin	3
Nickel	3	Titanium	5
Selenium	4		
Vanadium	5		
Zinc	15		

Non-Essential

Beryllium	?
Gold	0.004
Mercury	0.03
Niobium	0.01
Silver	0.15
Zirconium	0.02

These figures are not only useful in explaining the range and amounts of nutrients in seaweed. They also help us to understand our own very earliest relationship with sea water nutrients and the biological mechanisms which animals including human beings, evolved to deal with them. Not surprisingly, there are correlations between the usefulness of nutrients and their abundance in sea water.

Arsenic, for example, is essential in low amounts, a relatively non-toxic element although human activity has increased the amount in the modern environment. Animal life in the sea acquired a mechanism through which the more reactive, and thus more toxic form

of inorganic arsenic was made into a non-toxic, methylated organic form. This ability was retained by most higher animals including humans which readily excrete methylated arsenic via the kidney.

Arsenic is found in higher concentrations than mercury, so early life exposure to mercury was probably limited, and early life forms did not develop good methods to handle the amounts that are now sometimes encountered through human activity. Thus, mercury is a relatively toxic element (151). The good news is that DIVINITÁ™ contains many nutrients, particularly iodine and a range of special seaweed polysaccharides, which are very effective binders (chelators) of mercury - and other potentially toxic elements like lead. This enables excessive mercury to be excreted from the body through the bowel (unlike many mercury chelation protocols which take it out through the kidney) and even if the seaweed contains minute traces of mercury from the sea, there will be a net extraction of mercury by ingesting the seaweed.

Not only do we see that we are a product of our own relationship with Nature, but today we also know a lot more about the micronutrients largely ignored in a 'reductionist' view of Nature which also ignored the disastrous effect of unbalancing the soil by 'feeding' it - and our food - a starvation diet of phosphorus, nitrogen and potassium for half a century. There is now evidence, for example, that even lead has beneficial, perhaps essential, properties in low amounts. Environmental exposure to lead through human activity has resulted in intakes much above any requirement level and in frequent circumstances well above the amount that homeostatic mechanisms developed through evolution, are able to handle. This exposure has come about from the use of dishes and utensils containing lead materials, lead water pipes, lead-containing paints and lead additives to gasoline.

Thus it may be appreciated that it was the evolution of biological mechanisms to make use of, or protect against, the elements, rather than the elements themselves, which distinguishes a toxic from a non-toxic element. "Essential" therefore implies the presence of good (evolved) homeostatic mechanisms as a means to prevent toxicity over a wide range of intake, and certain foods like seaweeds, can actually help us in this task.

"Essential elements for humans, beyond those needed to form organic molecules and to perform electrolyte functions, are Calcium, Cobalt, Copper, Iodine, Iron, Magnesium, Manganese, Molybdenum, Selenium, and Zinc (155). Recently, rather conclusive evidence has come forth to include Boron and Chromium on this list. The possibility that other elements are 'Essential' remains.

This is supported by the existence of limited circumstantial evidence for the essentiality of Aluminum, Bromine, Cadmium, Fluorine, Germanium, Lead, Lithium, Rubidium, and Tin . Moreover, evolutionary aspects of some of these elements suggest that they will be established as Essential elements" . Seaweeds contain, in varying degrees, all of these original elements and are the most primary and stable form of nutrition for all life.

DIVINITÁ™ 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 DIVINITÁ™ 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, (see below under helicobacter).
DIVINITÁ™ 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 DIVINITÁ™ with all the other nutrients necessary for its metabolism and use by the body. DIVINITÁ™ are also Nature's most alkalizing food, over 75 times more than apples!

POSITION OF SEAWEED IN THE DIET

In terms both of its nutritional composition and its culinary usefulness, seaweed has validity firstly as a daily component, secondly in the diet of every man, woman and child at all ages, and thirdly as a minor component or ingredient.

It is an important component of nutritional balance. "As all in this world forms into opposites, seaweed mirrors land vegetation in a number of ways. The best seaweeds grow in cooler climes; the best land plants in warmer. A balance of nutrients is only obtained from the land in a wide variety of foods; in seaweed, from a single or a very few species. It is not a matter of 'either, or' but of seeking their combination to balance out the whole. This is why in Japan, in one of the world's most traditional and sophisticated diets, a very small amount of seaweed turns up in almost every meal. Once again, our focus might turn to the relationship between things, rather than to the things themselves, to find our own balance".

Although it should be a minor component, it is a minor component of the daily food, and not merely a food 'supplement'. In the well proven and sophisticated macrobiotic approach to a balanced diet, rooted in Japanese and Chinese culinary traditions, "a

small volume of sea vegetables, about 2%, is taken daily, eaten as a condiment, in soup, cooked with grains, beans and vegetables as a seasoning to supply minerals ...(and) as a small side dish about twice a week".

"Western producers of soya would like you to believe that the health of Japanese people depends on their consumption of soya. The truth is very different. Many of the health benefits of Japanese cooking can be attributed to seaweed, which is consumed daily in good amounts. Fresh and dried seaweed is full of nutrients and is extensively used in cooking in Japan and many other cultures of the world".
DIVINITÁ™ was conceived in this way not as some kind of superfood, nutraceutical or nutritional supplement, even if it can be used in this way, but as integral in human and animal nutrition just as it is integral in composting and the ecology of the soil. DIVINITÁ™ are 'foundational foods' because although the amount included in the daily diet is insufficient to live on by itself, it nevertheless ensures that small amounts of all the nutrients are present in the body continuously. This daily balance is exactly what is needed to help the body make best use of other foods eaten during the day - and help protect it from some that shouldn't be!"

MULTIPLE USES IN DIETARY BALANCE AND THERAPY

Consumers and healthcare practitioners have now been using DIVINITÁ™ 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.

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

It has beneficial application in many special diets. For wheat intolerance* DIVINITÁ™ vitamin E contains all the isomers otherwise found only in seeds like wheatgerm. DIVINITÁ™ 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. DIVINITÁ™ 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. DIVINITÁ™ 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"

In 2001 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*. DIVINITÁ™ micronized powder provides a re-mineralizing 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 alkalinize 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 DIVINITÁ™ seaweed capsules or condiments, made from organic, Arctic bladderwrack, which can be sprinkled on food - delicious!".
The consistently reported benefits of dietary inclusion of DIVINITÁ™, appear to accrue over the long term (6 - 18 months) and are readily maintained thereafter by a very low intake – 0,5 g per day (1 capsules) in adults, more in special cases like pregnancy or less for children. DIVINITÁ™ makes a permanent intake safe and gentle. Whilst the brown seaweeds including common kelp (e.g. laminaria) are Nature's finest source of natural iodine, DIVINITÁ™ Food Capsules from selected varieties of Arctic Wrack have only half the iodine of kelp so that a daily intake of DIVINITÁ™ 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 normal diet.

*further comment appears under A - Z below

ALKALINITY

Acidity within the digestive tract and blood result from many causes are healed. DIVINITÁ™' 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".

Wakame (closely related to DIVINITÁ™) 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.

ALLERGIES AND INTOLERANCES

DIVINITÁ™ are a useful source of nutrients in many special diets. Most of the dietary nutrients to be avoided because of allergy, intolerance, health condition or as in vegetarianism, the rejection of certain types of foods, can be obtained from the seaweed without the problems arising from those nutrients' normal food source.
There are no known allergenic substances in DIVINITÁ™ and since their introduction in 1998 not a single case of intolerance or biological rejection has been reported, unlike green 'superfood' formulations which often combine vegetables, seeds, fruits, berries, cereals, grasses and sometimes alg®, and may 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.

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 DIVINITÁ™, including fully bioavailable B12. The B12 found in wild wrack seaweed is the predominant cobalamide and an absorbable source for mammals. This is in contrast to the B12 in the fresh-water alg® spirulina, which is an inactive, unavailable corrinoid or pseudovitamin. DIVINITÁ™ are also an ideal vegetable source of iron (575 µg per gram), vitamin E with all its isomers, normally found only in seed oils like wheatgerm (230 µg/g), calcium (20 µg/g), magnesium (7000 µg/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. DIVINITÁ™ Food Capsules contain approximately 220µg iodine per 500mg , and DIVINITÁ™ special Everyday 'iodine' Capsule approximately 350µg per 500mg. In both cases the iodine is naturally 'colloidal' and 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. (See also below under Thyroid).

SALT REDUCTION AND REPLACEMENT

For those seeking to reduce or eliminate dietary salt, DIVINITÁ™ 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 those fed wild wrack seaweed powder avoided strokes - the seaweed proved to be an antidote to excess sodium consumption ! 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 also below under Salt replacement).

DETOXIFICATION AND WEIGHT CONTROL

Detoxification with DIVINITÁ™ 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, DIVINITÁ™ appear to achieve weight regulation rather than merely weight loss, helping the body to return to and maintain its natural homeostasis or equilibrium. (See also below under Detoxification, and Weight regulation).

PREGNANCY, LACTATION AND RECUPERATION

DIVINITÁ™ 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! 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! (See also below under Pregnancy).

ALZHEIMER'S, DEMENTIA AND MEMORY LOSS

(see also below under Degenerative diseases)

In Alzheimer's research there is some indication that the effect of antioxidants "may reduce the amyloid plaque deposition in the neuronal cells" . DIVINITÁ™ are an ideal whole food source of all the antioxidant nutrients and can be readily included in a liquid or solid diet at significant levels of daily intake for very long periods.

DIVINITÁ™ is also a natural source of vitamin B3 (nicotinamide) found in meat, fish beans, cereals and potatoes which may help protect the brain and boost memory in healthy people. US research has shown the vitamin reduces the level of a protein (phosphorylated tau) known to be involved in abnormal 'deposits' in brain cells called 'tangles' which contribute to brain conditions associated with Alzheimer's NB. The Alzheimer's Research Trust issued a warning that people should not use formulated B3 supplements until human research has been completed.

Vitamin B12 deficiency has also been linked to dementia and declining memory in old age, according to an Oxford, England study in 2008 . Brain shrinkage was greatest among adults with the lowest levels of B12 aged between 61 and 87, even though above the level defined as a vitamin deficiency. B12 is present is DIVINITÁ™ in a natural food form that is bioavailable to humans (91, and for details see below under Vegan and vegetarian diets).
High doses of formulated multivitamin and mineral supplements are not natural foods and may cause nutritional imbalances especially in the elderly.

AMALGAM FILLINGS

(see below under Detoxification, and Mercury toxicity).

Dr. J. G. Levenson, founder of the British Society for Mercury Free Dentistry first adopted DIVINITÁ™ Food Capsules for post-operative detoxification in amalgam extraction. The product continues in successful use by a number of eminent practitioners in this field.

ANTIBACTERIAL, ANTIBIOTIC AND ANTIVIRAL

(see also below under Candida, Helicobacter pylori/ulcer, Immune deficiency)

ANTIBACTERIAL

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.

Lectin extracted from Fucus seaweed aglutinates Candida guilliermondiii and Candida krusei. Japanese scientists isolated an 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. The fucose component of seaweed is known to act on Helicobacter 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".

In vitro and animal studies have demonstrated the efficacy of a fucoidan extract from Cladosiphon seaweed (known in Japan as Okinawan Mozuku) against Helicobacter pylori, further supported by subsequent human trials in a clinical setting, where similar results were observed against gastric ulcer and non-ulcer dyspepsia .
DIVINITÁ™ wild wrack seaweeds, all members of the order Fucaceae, or Fucus, are rich in polysaccharides including fucose especially DIVINITÁ™ Food Capsules and Food Granules which can be used at high levels of daily intake. The seaweed polysaccharide fucoidan has been shown to inhibit the growth of a number of gram negative and gram positive organisms.

ANTIBIOTIC

Laboratory research shows 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 Candia albicans, and a bacterium associated with pneumonia. Antibiotic activity of extracts of brown, green and red seaweeds may be facts in the importance of seaweed to faecal flora.

ANTIVIRAL

It appears that most if not all seaweed species contain antiviral sulphated polysaccharides. Research has shown a number of these including carageenans,

fuciodans and sulphated thamnogalactans, to have substantial antiviral activity against enveloped viruses such as herpes and HIV.

These compounds (the seaweed polysaccharides) block the entrance of viruses into cells, although other algal fractions also have virucidal and enzyme inhibitory activities, or can inhibit syncytium formation . A useful inhibitory effect against AIDS virus infection from the special polysaccharides in wrack seaweed was proposed in the early 1990s (63), since they make up approximately half of total carbohydrate 700mg/g (see Table 2 below for a comprehensive nutritional profile). In 2004, a research paper attributed one of the unifying characteristics in those countries with unusually low rates of HIV to the regular consumption of seaweed.

Fucoidan, a seaweed polysaccharide, has been shown to inhibit the growth of a variety of viruses. In cancer studies, fucoidan induced apoptosis (cell replication) of human T-cell leukemia virus (HTLV) type 1-infected T-cell lines and primary adult T- cell leukemia cells (see also below under Cancer) (179). Carrageenan has been studied as a potential vaginal micro biocide
The complex sulphated polysaccharides in DIVINITÁ™ stimulate lymphocyte and interferon production and other anti-tumor activity; also the immune enhancing Tand B-cells, inhibiting viral pathogenesis. Recent research (2000), using a red alg® Dumontiace® 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.

AUTISTIC SPECTRUM DISORDERS

(see also below under Detoxification, Hypothyroid, Immune deficiency, and Mercury toxicity).

DIVINITÁ™ 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).

DIVINITÁ™ 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 metallothionein (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. DIVINITÁ™ bind and remove or neutralize heavy metals including mercury, lead, cadmium, and radionuclides. The body's detoxification system:

"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".

DIVINITÁ™ 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, DIVINITÁ™ 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

A previously unreleased confidential report from the US Centers for Disease Control reports 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 pediatric vaccines in the first three months of life.

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 . Thimerosal is used widely as a preservative in vaccines, antitoxins, tuberculin tests and desensitization solutions. It may also be found in soap-free cleansers, nose, eye, and eardrops, eye ointments, topical medications, antiseptic sprays, cosmetics (including makeup removers, eye moisturizers, and mascaras) and cleaning fluids for contact lenses. UK regulators have recommended phasing out its use in vaccines.

Clinical nutritionist Jonathan Tommey identifies 7 key areas where "DIVINITÁ™ may prove beneficial to many autistics" focusing on DIVINITÁ™ 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 thyroxin, 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 DIVINITÁ™
- Rejuvenate gastro-intestinal tract and lungs with significant input of the seaweed polysaccharides.
- These represent a number of useful nutritional interventions more fully covered in a 2007 seminar reported by Jonathan Tommey in The Autism File.

Iodine, of which DIVINITÁ™ is an ideal natural source, has been noted by researchers in connection with the incidence ADHD and ADD in the children of iodine-deficient mothers in Western industrialized nations. .

BLOOD PRESSURE

(see also below under Cardiovascular, Cholesterol, and Salt Replacement)

Against nearly 40% sodium in salt, there is only 3.5% sodium in DIVINITÁ™ together with all the other minerals, trace elements and compounds naturally chelated and in a balance which is ideal for the human body (potassium 2.5%, Magnesium 0.7%, Calcium 2%, etc).

DIVINITÁ™ 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.

DIVINITÁ™ also provides a well-balanced supply of naturally chelated iron (575pg/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 , 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".

Hypotensive chemicals including histamine, which reduce blood pressure, have been isolated from wrack seaweed. Research especially at Lund University in Sweden confirms the beneficial effect of Omega-3 on blood pressure and blood cholesterol levels.

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 .

"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".

BLOOD TYPES

(see also under Helicobacter pylori/ulcers, below)

The Wrack seaweeds are excellent nutrients especially for Type O blood types. Dr P J D'Adamo highlights the importance of the polysaccharide 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.

DIVINITÁ™ 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 alg® should be avoided. D'Adamo lists seaweed among only 6 recommended supplements in the blood type O diet and DIVINITÁ™ contains all the other 5 with the exception of licorice which can be purchased as a desiccated natural root for making delicious tea. DIVINITÁ™ Culinary Ingredient (Ascophyllum wrack) can also be infused in water overnight and drained off as tea, alone or as an ingredient.

Of the various species of Wrack, 3 are contained in DIVINITÁ™ Food Capsules including Fucus referred to by Dr P. D'Adamo as 'bladderwrack'. He apparently singles out Fucus because of the research carried out using it, but all three DIVINITÁ™ species have an outstanding polysaccharide content so are theoretically equally useful sources for Blood Type O's.

BURNS

(see also under Skin below)

DIVINITÁ™ 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).

DIVINITÁ™ Microgranules can be prepared by mixing with a warm pure distilled or mineral water in the manner of a poultice or face pack until a suitably moist, warm paste can be applied - preferably at body temperature - to cover the affected area without 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 DIVINITÁ™ 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 (e.g. 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, Iodine and iodine deficiency, Immune system and deficiency, 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-tumor 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".

DIVINITÁ™ offers a useful nutritional input in cancer prevention, management and recuperation. Several varieties of kombu (like DIVINITÁ™ also a member of the Phaeophyta or brown seaweed family) are a traditional decoction for cancer in Japan, where scientists have been able to verify its effective treatment of tumors in the laboratory with: "complete regression in more than half the treated group".

The principal cancer-fighting substances are the special polysaccharides in the brown seaweeds, in DIVINITÁ™ 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. 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 tumor, breast cancer , intestinal cancer, leukemia, lung cancer , throat cancer , and research into the mode of action. Korean research also highlighted the role of sulphated fucoidan in the polysaccharides.

"Japanese scientists have run more than 500 clinical trials to discover whether there are elements in seaweed which could suppress the growth of tumor cells.
Researchers at the Japanese biomedical group Takara Shuzo discovered the polysaccharide known as U-fucoidan which literally causes cancer cells to self- destruct. Their research showed that when a small amount of this was added to a culture of colon cancer cells half of them died within 24 hours and trhe rest were completely eliminated after 72 hours" .

The incidence of breast cancer is rising worldwide, particularly in women over 50. It increased by 30-40% between 1973 and 1997 . Although it has dropped about 10% consistent with the reduced use of hormone replacement therapy (HRT), the incidence of breast cancer in the US remains the highest in the world, while Japan until recently had the lowest. Almost 15% of American women will develop breast cancer in their lifetime. Japanese seaweed consumption was 4.5g per day when last measured in 1964, which gives an average population intake of iodine of 13.8mg of iodine (now 12g per day against a US daily intake of 240µg or 50 times less) . Interestingly, some of the most dramatic results achieved with DIVINITÁ™ reported by practitioners and patients between 1998 and 2008 were when using between 6 and 12 Food Capsules or 1,2 – 2,4 grams of Food Granules per day which corresponds to the traditional average daily intake in Japan.

Seaweed appears to provide an effective defense against excessive salt (in particular sodium chloride). 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 . 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 .

DIVINITÁ™ are highly alkalizing - some 75 times more so than apples - and an alkaline system has a greater defense against cancer. 'A Cancer Therapy' by Max Gerson M.D. makes useful reference to the subject.
In the nutritional response to chemo- and radiotherapy, the special seaweed polysaccharides in DIVINITÁ™ come to prominence. They have been shown to reduce absorption of strontium, barium, tin, cadmium, manganese, zinc, and mercury'. 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.

In radiotherapy, offered to approximately 50% of cancer patients often in conjunction with surgery and/or chemotherapy, normal cells as well as cancer cells will be attacked, for example hair cells, stomach lining cells, blood cells, as well as healthy tissue adjacent to the site of the tumor. Intra operative radiation therapy (IORT) in which a source of

radiation is implanted directly into the body close to the tumor site, also damages other cells, however well targeted.

DIVINITÁ™ is an ideal nutritional foundation for all cancer therapies. At a high daily intake prior to and throughout treatment as well as in recuperation, the Food Capsules and Food Granules may give significant support to immunity and recovery, noted by practitioners and consumers alike.

DIVINITÁ™ also provide the entire range of antioxidants in an easily assimilable, natural form and balance. This is in stark contrast to the case of high-strength formulated antioxidant and vitamin supplements which are the subject of controversy, although there is no hard evidence that they are causative in cancer, including prostate cancer as has been claimed.

DIVINITÁ™ have already been included in the daily diet in food and drink for prolonged periods up to 6 months at strengths of up to 7 grams of the Food Granules (or 14 Food Capsules) per day with no side effects and with marked improvements in the general health of patients. DIVINITÁ™ have a particular contribution to make in nutritional protocols in conjunction with alternative or complementary cancer management and in the prevention of cancer, not least because a natural dietary solution can be maintained over a lengthy period.
In vitro research has shown that fucoidan in the polysaccharides of Wrack seaweed is a potent inhibitor of tumor cell invasion, acting to block tumor cell adhesion.

CANDIDA

(see above under Antibacterial, antibiotic, and antibacterial, also below under Immune deficiency)

Candida albicans is a parasitic yeast present in everyone's digestive tract. Normally it is dormant and harmless, but if the gut flora (consisting of at least 2,000 or so bacteria species covering 300 square meters of mucosal epithelium) gets out of balance, due for example to taking antibiotics, stress, or poor diet, the yeast is able to multiply, eventually causing symptoms which may range from persistent thrush and bloating to sugar cravings and hyperactivity.

Antibacterial agents present in Wrack seaweed have been shown in clinical research to make it 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). Lectin extracted from Fucus seaweed agglutinates Candida guilliermondiii and C. krusei .

The complex sulphated polysaccharides in DIVINITÁ™ stimulate lymphocyte and interferon production and other anti-tumor activity; also the immune enhancing Tand B-cells, inhibiting viral pathogenesis. Recent research (2000), using a red alg® Dumontiace® 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, 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 tumors or cancers, then seaweed is of additional benefit. Salt should normally be restricted during Candida overgrowth" .

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

CARDIOVASCULAR

(SEE ALSO ABOVE UNDER BLOOD PRESSURE AND BELOW UNDER CIRCULATION, CHOLESTEROL, AND DIABETES)

The polysaccharides in brown seaweed have been shown to offer several useful mechanisms in addressing coronary heart disease, cerebrovascular disorders, atherosclerosis, as well as carcinogenesis and cancer metastasis (see above under Cancer): the inhibition of smooth muscle cell proliferation (monoclonal hyperplasia) which is an important step in atherogenesis ; 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 ; 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 dioxalate.

In hypertensive patients supplemented with iodine to the level of 'whole body sufficiency', normalization of blood pressure without medications was achieved in small scale tests measuring various effects of significant iodine supplementation, and similar observations were reported by other physicians using the same program. The best results were achieved when orthoiodosupplementation was combined with a complete nutritional program emphasizing magnesium instead of calcium, with no significant side effects.

The polysaccharides have been shown to 'mimic' heparin, exhibiting the same anticoagulant activity (65, 66, 67) and a higher antiproliferative activity . Its anticoagulant activity chiefly relates to the breakdown of fats in the blood, but DIVINITÁ™ 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 DIVINITÁ™ as there are, for example, with aspirin in conjunction with these drugs.
Other research also indicates that the fucoidan fraction in Wrack seaweed possesses anticoagulant activity and fibrinolytic properties.

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. Several components of brown seaweeds have been shown to have cardiotonic 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 3200 mg/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. 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".

Iodine, of which DIVINITÁ™ is an ideal natural source, may also play a significant role in cardiac function. It has been shown that optimal 'whole body' levels of inorganic, non-radioactive iodine results in "optimal cardiac functions".

CHOLESTEROL

(see also above under Blood pressure and Cardiovascular diseases)

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

DIVINITÁ™ may help to reduce cholesterol possibly due to the neutralizing action of their unique range of polysaccharides and the regulating effect of its comprehensive mineral content on blood and plasma. It does not reduce the cholesterol we need, whether in the cardiovascular system or brain.

"Thanks to the promoters of the diet-heart hypothesis, everybody 'knows' that cholesterol is evil and has to be fought at every turn. If you believe the popular media you would think that there is simply no level of cholesterol low enough. The truth is that we humans cannot live without cholesterol".

The primary seaweed polysaccharide is alginic acid, a linear polymer of L-guluronic and D-mannuronic acid which may inhibit cholesterol absorption. A purified carbohydrate product extracted from various brown seaweeds, called algin or sodium alginate, is used widely in industrial processing as a binding agent. Orally, algin is used to lower serum cholesterol levels.

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.

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 mineralization possibly leading to better circulation.

DEGENERATIVE DISEASES

(See also above under Alzheimer's)

DIVINITÁ™ are an ideal nutritional foundation in the management of all degenerative diseases because of the breadth and balance and the bioavailability of their nutrients. This is of particular use in cases of impaired mastication and digestion and the restricted uptake of nutrients in the sick and elderly.

DEMENTIA

(SEE ABOVE UNDER ALZHEIMER'S AND DEMENTIA)

DENTAL NUTRITION

(SEE ALSO BELOW UNDER DETOXIFICATION, AND ORAL HYGIENE)

DIVINITÁ™ 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.

DIVINITÁ™ 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 for the use of alginate (from seaweed polysaccharides) to deter and remove dental plaque.

Several toothpastes contain Ascophyllum or Carragheen seaweeds for this reason. A sulfated polysaccharide called funoran, isolated from Gloiopeltis furcate seaweed, was found to effectively inhibit the adherence of dental plaque .DIVINITÁ™ Food Granules, Culinary Ingredient, and Salad & Condiment products are all chewed in the mouth, have a significant component of the polysacchardides, 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, 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!

DEPRESSION

Professor Jane Plant, professor of environmental geochemistry at Imperial College, London is chief 'toxic chemicals' adviser to the British Government, and a trustee of Prince Charles's Foundation for Integrated Medicine, with Janet Stephenson, an NHS psychologist, advocate a "radical overhaul" of the way the NHS treats people with some form of mood disorder, challenging many conventions of mental health treatment.

"Rather than just being prescribed a diet of pills such as Prozac, get a taste for seaweed and sushi, treat yourself to a smoothie, and send fewer text messages", they say.

DETOXIFICATION

(SEE ALSO BELOW UNDER DIABETES, OBESITY, SKIN, AND WEIGHT REGULATION)

DIVINITÁ™ are effective in detoxification 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 full metabolism of carbohydrates, proteins and fats, helping protect against acidosis - the most alkaline forming of all

natural foods, over 75 times more so 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.

DIVINITÁ™ arctic wild wrack seaweeds contain all the antioxidants and important 'detoxification' nutrients like zinc, magnesium, selenium, molybdenum as well as all the other minerals and trace elements, enzymes, amino-acids and important compound nutrients. Dr Robert Gray, the colon cleansing specialist, regards wild wrack as an excellent mucotropic herb (anti-mucous) to cleanse the lymphatic system, and to:

"loosen, soften or dissolve hardened, stagnant or impacted mucoid 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" .

HEAVY METALS

Patients should understand that the presence of arsenic, cadmium, lead, mercury and other potentially toxic metals are widespread in the environment and that tap water, air pollution, fish, processed foods, dental fillings, old paint, tobacco smoke, medications, pesticides, cosmetics and toiletries are only some of their most common sources.

DIVINITÁ™ are uniquely certified free of ocean-borne contaminants (e.g. aromatic hydrocarbons, toxic metals (e.g. mercury) and microbial pathogens (e.g. salmonella).

Heavy metal toxicity may impair mental and central nervous system function and energy levels, and damage vital organs. Long term exposure may lead to physical, muscular and neurological degeneration which can mimic Alzheimer's and Parkinson's diseases, muscular dystrophy and multiple sclerosis
Iodine of which DIVINITÁ™ is an ideal natural source, at 390gg per gram in the Food Capsules and Food Granules used in mercury detoxification protocols, and at 700gg per gram in DIVINITÁ™ Iodine+ Capsules, also has an important role, observed in iodine supplementation research. "The results obtained... revealed that in some subjects, the urine levels of mercury, lead, and cadmium increased by several times after just one day of supplementation. For aluminum, this increased excretion was not observed usually until after one month or more on the iodine supplementation." Furthermore, this author's

research in orthoiodosupplementation achieved "increased urinary excretion of the goitrogens fluoride and bromide".

The polysaccharides in DIVINITÁ™ including mannuronic acid, laminarin and fucoidan, are the subject of continuing research for anticancer and antitumor compounds. They have been shown to bind and remove barium, cadmium, lead and mercury and...reduce absorption of strontium, barium, tin, cadmium, manganese, zinc, and mercury.

RADIATION SICKNESS

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. DIVINITÁ™ was included in the diet of child victims of the Chernobyl disaster in 2003.

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.

DETOX THERAPIES

In chelation therapy, some environmental medicine practitioners use synthetic agents such as DMSA (dimercaptosuccinic acid) and EDTA (ethylenediaminetetraacetic acid) which may produce unwanted side effects due to an excessive burden on the body's own detoxification systems. They can be effective nevertheless as a one-off treatment or last resort for chronic poisoning.

A range of natural foods and herbs including seaweed also have powerful, natural chelating properties.
Chlorella contains chlorophyll known to bind and remove cadmium, lead and mercury, and glutathione, useful in liver detox (195). Spirulina may be especially useful in lead chelation . Cilantro (Chinese parsley and leafy coriander) has been found to assist excretion of toxic metals including mercury (198). NAC, MSM, charcoal, selenium, ,magnesium, zinc, and vitamins A, C and the B complex are all useful adjuncts to therapy, all of which are contained in DIVINITÁ™ but may warrant additional supplementation if increased amounts are required. A low fat diet containing plenty of antioxidants including such vegetables as onions, garlic, broccoli, brussels sprouts, cabbage, cauliflower and kale will assist detoxification.

DIABETES

(See also Cardiovascular Diseases, Detoxification, Digestion, Obesity and Weight regulation)

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".

In diabetic patients on insulin, iodine supplementation improved control of the condition and in some cases it was alleviated without resort to insulin.

It is relevant here that DIVINITÁ™ is certified free of environmental contaminants. In 2006, Korean researchers found that diabetes was over 5 times more prevalent in people carrying higher concentrations of a variety of pesticides and other chemicals. All the chemicals in question (e.g. dioxins, polychlorinated biphenyls) were lipophilic, which means they tend to collect in body fat . More fat means more storage of environmental pollutants.

Research co-operation between Sheffield and Sheffield Hallam Universities and Technostics Ltd, England in 2008 demonstrated the potential of seaweed alginate to offset preclinical metabolic syndrome symptoms including insulin resistance, to treat type 2 diabetes mellitis and hypercholesterolemia, and consequently to reduce the risk of developing cardiovascular disease.

Subsequent research studied the efficacy of the alginate in modulating energy intake, suggesting that it may modulate appetite by reducing postprandial glucose spiking and be highly effective in overweight and obese subjects.

These findings highlight the efficacy of "medium to long term use of a daily sodium alginate formulation (already a significant component in whole food DIVINITÁ™ without extraction) alongside suitable healthy lifestyle changes, may help individuals to achieve this target reduction in (excess) energy intake.

As a whole food DIVINITÁ™ has the natural advantage of delivering multiple benefits in

obese, diabetic and weight regulation subjects: detoxifying the body in a variety of ways, reducing body fat and fats in the blood, improving weight regulation without the de-nutrifying effects of dietary weight control.

DIGESTION

(see also below under Indigestion)

DIVINITÁ™ remarkable nutritional profile is found to be helpful in patients with compromised digestion and metabolism. DIVINITÁ™ mucilaginous polysaccharides have a healing effect on damaged intestinal villi. They are known to assist the survival of 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.

They help the body's acid-alkaline balance being by far the most alkalizing of all natural foods. DIVINITÁ™ wild wrack is over 75 times more alkalizing than apples (the old saying "an apple a day keeps the doctor away" is largely a reference to their good effect on acid-alkaline balance.

It is well known that in order to metabolism any single nutrient (e.g. a protein or carbohydrate) many other nutrients (e.g. enzymes, co-enzymes, trace elements) are required for what is in effect, a very complex process. In the digestion of a single meal, although the body can manufacture many of the nutrients it needs for all the metabolic processes involved, this 'manufacturing' must also draw on a vast array of nutrition. Many nutrients required which cannot be obtained from an ordinary diet are present in DIVINITÁ™.

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

A consumer contributes: *"If you cook pulses, e.g. black eye beans, with DIVINITÁ™ in the water (e.g. a teaspoon of Culinary Ingredient), it helps soften the outer wall of the beans, reduces the cooking time and makes them more digestible. The water will contain valuable nutrients so the water should not be discarded. The alkalinity of the seaweed may help balance the acidity of the beans*".

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 glycosalminoglycans to alter, these polysaccharides are useful because they can be absorbed across the gastro-intestinal mucosa.

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 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.

ECZEMA

(see also below under Skin)

Eczema in adults is a common and frequently repetitive condition and "over the long term, atopic eczema affects family life in 80% of patients".

The standard alopathic prescription medication is hydrocortisone creams which helps control the symptom but the condition frequently reappears when daily use is topped.

Elimination diets which seek to pinpoint food allergies and intolerances have shown that certain foods can trigger eczema in some patients. In 2008 DIVINITÁ™ sponsored a University MSc nutritional study into the effect of brown seaweed on the skin of 28 carefully profiled eczema sufferers taking 1,2 g mixed DIVINITÁ™ (3 DIVINITÁ™ Food Capsules) daily for 12 weeks.

As a topical healing agent, brown seaweed has been used with good results over many years. "The activity of enzymatic extracts (of brown seaweed) was even higher than that of the commercial antioxidants".

The topical application of DIVINITÁ™ 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.

(see above under Cancer)

Results similar to those in cancer research where seaweed nutrients are found to eliminate or inhibit the growth of cancer cells, were obtained at the University of California in endometriosis in trials using bladderwrack (Fucus vesiculosis).

"The most profound discovery was that women with endometriosis and severe menstrual irregularities experienced significant improvement in their symptoms after just 3 months of taking 700mg of the seaweed capsules per day".

HAIR AND SCALP

A number of our customers have found relief from conditions of the hair and scalp using one of our products or a combination of DIVINITÁ™ Food Capsules and/or Food Granules, and our recently developed liquid DIVINITÁ™.
For example 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 taking Food Capsules and using the Liquid in a nettle shampoo, she was losing hair in double figures and the infection was evidently in retreat with markedly less itching. After less than 30 shampoos she was losing a better than normal 2 or 3 hairs per shampoo. She has since remained free of any infection.

The common experiences of male and female customers who have been using the Food Capsules for several years is reported to be that it reduces or helps reduce hair loss and improves its condition, which tends to support these findings.

Scalp and hair shampoo as used by our customer twice weekly:

- Mix 1 and a 1/2 teaspoons of DIVINITÁ™ liquid diluted* in 1 cupful of lukewarm mineral water
- Apply to dry hair, drizzling over the hair using the fingers to work it into the scalp
- Leave on the head for 30 minutes, then rinse out the liquid 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 toweling 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 liquid 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 if left on the skin longer than 15 minutes when it will tend to 'dry out' the skin
We wish to make it clear that our product and suggested use does not constitute a treatment or cure or herbal remedy. The product is a pure 'whole food' and we merely wish to relay this particular customer's experience, with her permission. Use of the Liquid which is available.

"Seaweed feeds the shafts and the ducts of the scalp to help improve the health of the hair. It has been said that the thick, black, lustrous hair of the Japanese is partly due to their regular diet of mineral-rich brown sea vegetables"

Healthy hair requires many nutrients, particularly protein, vitamins A, B, C, D and E, essential fatty acids (EFAs) particularly Omega 6, and a range of micronutrients particularly zinc (161), all of which are present in seaweeds.

HEARTBURN

(see also below under Indigestion)

"For heartburn, grill some dried kombu (a Japanese brown seaweed closely related to Divinitá™-biopolym) and then eat it".

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 of whom Dr Peter D'Adamo says: "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".

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".

In vitro and animal studies have demonstrated the efficacy of a fucoidan extract from Cladosiphon seaweed (known in Japan as Okinawan Mozuku) against Helicobacter pylori, further supported by subsequent human trials in a clinical setting, where similar results were observed against gastric ulcer and non-ulcer dyspepsia.

DIVINITÁ™ wild wrack seaweeds, all members of the order Fucaceae, or Fucus, are rich in fucose especially DIVINITÁ™ 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.

HERPES

(See below under Immune deficiency)

HIV

(See above under Antibacterial, antibiotic and antiviral)

HYPERACTIVITY / ADHD

(SEE ABOVE UNDER AUTISTIC SPECTRUM DISORDERS AND BELOW UNDER DETOXIFICATION)

DIVINITÁ™ 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 1 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 recognized, 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 1 - 2 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 SYSTEM / DEFICIENCY

(See also above under Antibacterial, antibiotic and antiviral, and below under ME)

Wrack seaweeds contain polysaccharides including fucoidans (containing mainly fucose and sulfate) and fucans (composed of neutral sugars with a high content of uronic acids) as well as glucosamine. Fucus species also have a lectin or lectin-like compound. Fucus is known to modulate the effects of the immune system on the thyroid.
Fucoidan stimulates immunoreactions of the humoral and cellular types), enhances the phagocytes of macrophages, and suppresses eosinophil recruitment to sites of allergic

inflammation. It also inhibits the growth of gram negative and gram positive organisms and a variety of viruses.

DIVINITÁ™ complex sulphated polysaccharides stimulate lymphocyte and interferon production and other anti-tumor activity; also the immune enhancing T- and B-cells, inhibiting viral pathogenesis. Research using a red alg® Dumontiace® 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, which make up approximately half of total carbohydrate 600mg/g (see Table 2 below for a comprehensive nutritional profile). In 2004, a research paper attributed one of the unifying characteristics in those countries with unusually low rates of HIV to the regular consumption of seaweed.

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.

DIVINITÁ™ 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, DIVINITÁ™ 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, DIVINITÁ™ is the most alkaline-forming (see above under Alkalinity).

Certain seaweeds including DIVINITÁ™ 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".

In respect of the above quote, customers report that this is also true for the sulphurous vegetables like cauliflower, cabbagesm chick peas and flageolot beans.

INFLAMMATION MODULATION

(see also below under Obesity)

Seaweed polysaccharides have been shown to act as inflammation inhibitors and inflammation promoters. For example, carrageenan from red seaweed is used as an inflammation promoter in animal studies, whilst some carrageenan fractions are also anti-inflammatory.

Fucoidans from brown seaweeds are usually anti-inflammatory and potent selecting blocking agents. Fucoidans have also been used to reduce post-ischemic leukocyte influx into damaged organs.

Different histological effects on the endothelial cells of the gut (lining) have been shown following ingestion of green and brown seaweeds (nori and kombu). Experimental rats fed on brown seaweed had a lower incidence of submucosal oedema than those fed on nori, possibly reflecting the lower sodium/potassium ratio in the brown seaweed.

IODINE AND IODINE DEFICIENCY

(see also below under Obesity, and in greater detail under Thyroid)

World Health Organization guidelines advise a safe maximum daily intake of 1000 µg and the British Health Food Manufacturers Association advises that food supplements should not deliver more than 500 µg per day.
The UK Government adheres to a RDI / (recommended daily intake / amount) of 150 µg whilst in America this is 200 µg. There is no international agreement on a maximum safe daily intake.

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

Inexpensive kelp tablets are a natural source of iodine, but are seldom of organic food quality. Most kelp is the by-product of industrial harvesting for horticultural use or for alginate extraction where human food quality seaweed is not important.

Kelp is a less balanced source of iodine than DIVINITÁ™ and is unlikely to be certified free of contaminants, toxic metals and microbial pathogens. No product of organic quality was available. DIVINITÁ™ capsules are also entirely free from additives and manufacturing incipient, and may still be the only pure vegetable source on the market.

In 2007 DIVINITÁ™ Iodine+ Capsules 60 were introduced having all the micronutrients necessary for proper iodine metabolism and use by the body. Each 500mg vegetable capsule typically provides 350 µg natural iodine. Any iodine excess to the body's requirements can be excreted.

If a higher level of all the other nutrients is required including iodine, DIVINITÁ™ original mixed wild seaweed Food Capsules typically provide 399 µg per gram (recommended daily use of 1 x 500mg capsules - 200 µg per 500mg capsule).

If a lower level of iodine is required, use just one half Food Capsule daily. All DIVINITÁ™ capsules are suitable for continuous daily use.

The principal difference between these two kinds of capsules is that the Iodine+ Capsule contains a single wild Wrack seaweed with a high iodine content (DIVINITÁ™-Ascophyllum), whereas the Food Capsule is a deliberately low-iodine mix of DIVINITÁ™ seaweeds (Ascophyllum) which provide higher levels of all the other nutrients in relation to the iodine.

Whilst soil mineral deficiency may even exclude iodine (a micro- or trace mineral) altogether, the widespread use of (unchelated) iodine in animal feed, milk and dairy

products have made these the main sources of iodine in the diet, disadvantaging vegetarians. Whilst UK government statistics estimate an average adult daily iodine intake of 200 µg, average daily intakes of 80 µg may not be uncommon in vegans. DIVINITÁ™ 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".

Several papers provide a comprehensive review of the research on this subject. 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.

The marked decline in dietary iodine during the past fifty years included the removal of iodate from bread during the 1980s, when it was largely replaced by the goitrogeneous additive, bromate. This has since been associated with an increased incidence of obesity, diabetes, and hypertension as well as thyroid and breast Cancer.

Recognizing the deficiency of iodine and the excess of sodium in the nation's diet, the latter caused largely by its addition to our daily bread, DIVINITÁ™ approached a number of bread manufacturers in EU and elsewhere, inviting them to replace salt with DIVINITÁ™ Culinary Ingredient.

Iodine, of which DIVINITÁ™ is an ideal natural source, has been noted by researchers in connection with the incidence ADHD and ADD in the children of iodine-deficient mothers in Western industrialized nations.

American clinical experience and a raft of scientific research supports the view that a chronic lack of iodine in our daily diet may be largely responsible for an epidemic of thyroid-linked illnesses, breast cancer and fibrocystic disease. It has been noted by DIVINITÁ™ and in the US, that successful treatment of these conditions has been achieved using what we might regard as high levels of iodine, but which are in fact equivalent to average daily intakes in Japan, largely from the traditional inclusion of seaweed in their daily diet.

It is known that iodine induces apoptosis (programmed cell death) a process essential to growth (e.g. in the fetus, fingers are formed by apoptosis of the tissue between them) as well as to destroy cells which represent a threat to the organism (e.g. cancer cells or

virus-infected cells). Human lung cancer cells undergo apoptosis (shrink) when genes are spliced into them to enhance iodine uptake, both in the laboratory and when implanted in mice.

The incidence of breast cancer in the US is the highest in the world at 1 in 7, while in Japan until recently it was the lowest. Japanese women who emigrate from Japan or adopt a western diet have a higher rate of breast cancer compared with those consuming traditional levels of seaweed. Thirty years ago iodine consumption in the USA was twice as high as today and the incidence of breast cancer almost 1/3rd. Drs Abraham, Brownstein and Miller have accumulated a wealth of information on this subject, diligently reported in a 2008 issue of Caduceus magazine.

Other US researchers have shown that iodine increases the antioxidant status of human serum similarly to vitamin C , removes biological toxins and the toxic environmental chemicals fluoride, bromide, lead, aluminum and mercury, suppresses auto-immunity, strengthens the T-cell adaptive immune system and protects against abnormal bacterial growth in the stomach.

[Based on US research in the 1960s it was proposed on The Archers (BBC 25.05.08) that badgers, their immune systems lowered by deficiencies in iodine and selenium, were succumbing to TB and infecting local cattle]

MALARIA

Fucoidan in Wrack seaweed has an anti-adhesion activity against Plasmodium falciparum, the Malaria parasite, and is capable of inhibiting sporozite invasion of hepatocytes and merozoite re-invasion of erythrocytes.

MENINGITIS

Fucoidan in Wrack seaweed has been shown to reduce the accumulation of leukocytes and plasma protein in the cerbrospinal fluid (CSF) of rabbits with macterial meningitis . The inflammatory recruitment of leukocytes into the cerebrospinal fluid during bacterial meningitis has been shown to contribute to neurological damage.

Lectin extracted from Fucus species has been shown to have a toxic effect on some strains of E. coli and all strains tested of Neisseria meningitidis.

ME

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

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 DIVINITÁ™ 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.

Various modes of action combine to assist in metabolism. Most evidently, DIVINITÁ™ contains all the nutrients - including many that will be missing in a normal meal. It is well known that in order to metabolize 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 - DIVINITÁ™ 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 DIVINITÁ™ - 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 DIVINITÁ™ 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.

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 metabolize the 'deficient' nutrient which is actually already present in the diet.

Metabolism includes not only the body's uptake, but actual utilization 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.

DIVINITÁ™' special polysaccharides are known to assist the production of beneficial intestinal bacteria and the condition of the gut wall.

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 minimize 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 DIVINITÁ™ immune enhancing, anti-viral and anti-microbial properties . Hence this type of seaweed is considered to have "exceptional value" in the natural treatment of Candida overgrowth (Candidiasis) in the intestine.

There are also numerous mechanisms, well supported by scientific research, by which DIVINITÁ™ 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.

OBESITY

(See also under Cancer, Detoxification, Diabetes, Digestion, Metabolism and metabolic disorders, Thyroid and iodine-deficiency, and Weight regulation)

The British Government acknowledged in 2007 (Tessa Jowell, the Health Secretary) that there had been an increase in childhood obesity of 40% in the previous 10 years.

The concomitant prediction is that a 1/4 of the UK population will be overweight by 2020. Lord Crebbs, ex-chairman of the Food Standards Agency publicly admitted that food marketing and advertising does have an adverse effect on population diet (BBC Radio 4, 3rd June 2007).

The body with obesity is a body in metabolic crisis with chronic inflammation, in many cases a symptom of fundamental nutritional imbalance. The comprehensive and balanced nutritional composition of DIVINITÁ™ with its known effects on metabolic disorder and broad representation of all the micronutrients not readily 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 .
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 these decreases, as could changes in the way food is processed, stored and transported, but

the Food Commission, an independent consumer watchdog, thinks the impact of intensive farming may be causative.

"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 fertilizers that don't replace the wide variety of nutrients which plants and humans need".

A 2006 article in Positive Health magazine reported that "there are now more overweight than under-nourished people in the world". An average adult in the heavily industrialized 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, but Dr Baillie-Hamilton pointed out that "the ingredients required (for such a protocol) are not generally found in any quantity or quality in typical Western diet".

That is, high doses of anti-oxidants, B vitamins, trace minerals, essential fatty acids, soluble fiber, amino acids - all of which without exception are naturally present and in balance in all of DIVINITÁ™ wild Wrack seaweeds. Dr Baillie-Hamilton also emphasized that for the necessary detoxification to be effective, the correct alkaline pH balance is essential. DIVINITÁ™ 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. DIVINITÁ™ began its own research program 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.
Canadian research at the University of Laval in Quebec looked at the increased risks of food and environmental toxicity in obesity, noting that industrial chemicals and particularly those that act like hormone disrupters - all of which have been found to accumulate in body fat cells - profoundly alter several aspects of human metabolism and appetite control.

The conclusion is that several pernicious cycles are set up through food and environmental toxicity, weight loss as well as weight gain, and poorly informed detoxification. Weight loss without proper detoxification leads to toxic substances stored in fat cells being released into the bloodstream, and as levels of these toxins rise, so levels

of essential thyroid hormones necessary to maintain efficient metabolism, fall dramatically.

A concomitant reduction in muscle oxidative enzymes - which determine how efficiently the muscles use energy - results in energy again being stored as fat, completing the cycle: weight loss - rising contaminants - loss of oxidative enzymes - increased fat. Other cycles may be set up through impaired hormonal function and imbalance including over-eating and obsessive dietary imbalance.

DIVINITÁ™ can help neutralize fat and pollutants; restore hormonal balance, the thyroid in particular; and help regulate weight and improve circulation.

Obesity increases the requirement for iodine and up to 100,000 µg (100mg) of elemental iodine per day may be required to achieve and maintain sufficiency . Another factor involved in the increased demand for iodine is the presence of excessive amounts of goitrogens from the diet and lifestyle (substances harmful to the thyroid), for example smoking...which interferes with the sodium/iodide symporter function...and fluoride...which interferes with the uptake of iodide by the thyroid gland symporter system (and it is suggested that) fluoride causes oxidative damage to the halide-binding site of the symporter...and bromide...and potassium perchlorate (which it is suggested may be) in dairy and breast milk.

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 DIVINITÁ™ 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 DIVINITÁ™ 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.

OSTEOPOROSIS

Eating more calcium-rich foods alone is not enough; the kind of calcium you ingest needs to be easily digested and needs to stay in your blood so it can get to your bones. Seaweeds are abundant sources of nondairy calcium and have a good balance of magnesium for proper absorption.

Rockweed and bladderwrack (same varieties as in DIVINITÁ™ are by far the richest in calcium of all the marine plants... (Brown seaweed also)increases calcium uptake in the digestive tract to support healthy bone formation and prevent bone loss as occurs in osteoporosis...

Research studies in Osaka, Japan at the Calcium Research Institute demonstrated that rats fed seaweed as part of their daily diet experienced improved intestinal absorption of calcium, preventing a decline in bone mass - also pH-balancing (alkalizing) so it can help prevent calcium from being drawn away from the bones to buffer an acid system.

Seaweed provides the body with a bioavailable, effortlessly absorbed, and effective form of calcium, which goes far in strengthening bones and teeth and preventing osteoporosis... Scientists have discovered that fucoidan, an extract of brown seaweed, helps promote the formation of fibronectin, a chief substance for keeping joints lubricated and flexible.

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 fetuses 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. DIVINITÁ™ 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 1,5 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 DIVINITÁ™ 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" .

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)

In 2007 the British Government funded the Food Innovation project to find healthy alternatives to widely used harmful ingredients in manufactured foods, including sodium chloride (processed salt). The results in 2008 showed DIVINITÁ™ not only to provide an ideal balance of all the mineral salts, but to behave as a natural preservative, so increasing shelf life, by significantly inhibiting the growth of microbial pathogens, stabilizing the water content and acid-alkaline (pH) balance of the food in which it was an ingredient .

DIVINITÁ™ is a healthy alternative to salt in any food and will not adversely affect taste; rather the food becomes more complex, revealing its real flavors previously obscured by the dominant impact of salt.
In Japan, 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 .

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 .

Although sodium intake can be reduced in cooking and at the table, almost three quarters of dietary sodium is already added to manufactured foods so diligent shopping is the real solution.

Some leading salt brands and ingredients compared to pure DIVINITÁ™-BIOPOLYM wild seaweeds

	Sodium	**Potassium**	**Magnesium**
LoSalt	13%	66%	0.6%
Ruthmol	0.1%	24%	0%
Saxa table salt	39%	0%	0%
DIVINITÁ™-BIOPOLYM	3.5%	2.5%	0.7%
Solo	16%	41%	17%

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 metabolize 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 DIVINITÁ™ in which potassium is present at about 25mg per gram. DIVINITÁ™ 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.
In 2007, the US advocacy group CSPI (Center for Science in the Public Interest), petitioned the US FDA (Food & Drug Administration) to remove GRAS status (Generally Recognized As Safe) from salt (148) and the following is the summarized conclusion of Dr Joseph Mercola, Association of American Physicians and Surgeons (Illinois, USA): The negative and health impacts of salt have been argued by interest groups for years and it is generally accepted that industrialized nations consume too much. Although excess sodium has been linked to hypertension (high blood pressure) no scientific studies have proved a link between low sodium diets and reduced risk of heart or other diseases (E.g. An 8-year study of hypertension in New York found subjects on a low-salt diet had 4 times as many heart attacks as people with normal salt intakes). Also, studies are faulty in that they have not controlled for variations in the type and quality of salts involved.

Dr Mercola concludes that the type of salt we use is at issue rather than salt per se. 75% of salt intake in the average diet is from processed foods where the salt used is also generally of the highly processed variety. A high proportion of this is in baked goods like bread. Processed salt is typically 97.5% sodium chloride and 2.5% chemicals (such as moisture absorbents, flowing agents, and iodine which is not the natural inorganic non-radioactive form of iodine in e.g. seaweed). Processed salt is dried at very high temperatures (over 1,200oF / 649oC) which alters the ionic structure of the salt. The body can only eliminate excess processed salt if water molecules react with the sodium, breaking it up into sodium and chloride. To neutralize these ions, water is taken from the body's cells, which may compromise the fluid balance in the cells. For every excess gram of sodium chloride the body uses 23 times the amount of water to neutralize the salt. This can result in cellulite, rheumatism, arthritis, gout, and kidney and gall bladder stones. But there are plenty of natural salts which contain the minerals the body needs and which the body can readily metabolize and expel if surplus to requirement.

In the UK, the FSA (Food Standards Agency) has set recommended limits on consumption and is working with food manufacturers to reduce the amount in processed foods as is the case in the USA and Canada where the CSPI wants salt re-categorized as a food additive instead of GRAS. If applied to all salt irrespective of type and quality this might do nothing to clarify the core issue which might better concern itself with quality rather than quantity.
Although in response to public and some regulatory pressure, many major brands appear to be reducing salt and other undesirable ingredients in their products, in many cases they make up for the 'taste deficit' by adding more sugar and fats, so the overall 'calorie creep' and systemic damage may still not achieve the intended health benefits.

SCALP

(see above under Hair and scalp, also below under Skin)

SKIN

(see also above under Burns, Circulation, Eczema, Hair and scalp, and below under Weight regulation)

Wrack seaweed has been a traditional feed ingredient for 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 color 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.

The topical application of DIVINITÁ™ 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. The Microgranules are available exclusively by mail order from one of DIVINITÁ™ Retail Partners:

Seaweed has long been considered to contribute to youthful skin color .

"Its high concentrations of zinc and vitamins A, B, C and E make it a potent remedy for poor skin conditions. I [personally became convinced as to the genuine health benefits of seaweed during my first attempt at eating nothing but foraged foods back in 1995. Seaweeds were my daily staple and sped me along (cycling) at 70 miles a day with energy and enthusiasm. Last July on a high seaweed 100% wild food diet I managed to halve my bad cholesterol in a month" - wild food celebrity Fergus Drennan, 2008 .

SPECIAL DIETS

(See above under Allergies and intolerances)

THYROID AND IODINE-DEFICIENCY

(See also above under Immune system and deficiency, Obesity)

Worldwide some 200 million people are estimated to suffer under-active thyroid (hypothyroidism) which at any age may disturb regulation in almost any tissue in the body.

Common symptoms are tiredness, weight gain, constipation, aches, dry skin, lifeless hair and feeling cold. DIVINITÁ™ are a source of all the micronutrients involved in regulating and stabilizing the endocrine system of which the thyroid is a critical part. Therefore they are also an excellent source of natural, stable, chelated iodine with the full balance of the other nutrients like selenium required for its metabolism. Within the thyroid, iodine combines with other nutrients to produce tri-iodine (T3 - 3 atoms of iodine) and thyroxine (T4 - 4 atoms of iodine). Artificial replacements of these thyroid hormones are available

but ‘override’ the thyroid, rather than revitalize it.

Regular intake of DIVINITÁ™ Food Capsules and/or Food Granules may help to regulate thyroid activity and assist wider hormonal balance. The organic iodine in DIVINITÁ™ Food Capsules is not excessive at about 390µg per gram and surplus to bodily requirement is readily excreted which may not be the case with synthetic formulations.

The position was clearly elaborated in Foods Matter magazine .: The thyroid is one of the family of glands (called the endocrine system) that controls hormone production.
In descending order (from the top of the head) they are the pineal gland, the hypothalamus, the pituitary (all within the brain), the thyroid (in the neck), the adrenals and pancreas (just below the stomach) and the ovaries and testes.
The main function of the thyroid is to regulate the release of energy within the cells - so too much of the thyroid hormones will cause an excess of energy, and vice versa.

There are four thyroid hormones. First, T4 (thyroxine) which is really only a way of storing energy until it is needed. To produce energy, T4 is converted with the help of enzymes into T3 which actually gets into the cells and produces energy. If the thyroid cannot produce enough T3 then no function, physical or mental, can operate at full efficiency (typical for ME sufferers). There are many causes of thyroid malfunction including prolonged or recurrent high levels of stress, genetic failure, autoimmune disorders like glandular fever, trauma, poor liver function, micro-malnutrition, serious infections, the impact of environmental toxins like pesticides, mercury and fluoride, and electromagnetic radiation.

THYROID TESTS: Before the development of the TSH blood test (thyroid stimulating hormone), diagnosis was based on family history, observation of symptoms and measuring body temperature (the basal blood test). TSH is released by the pituitary which instructs the thyroid to convert more T4 into T3. Normal levels of TSH are deemed to run from 0.15 micro units per milliliter (mu/L) to a maximum 6 mu/L (The NHS uses a range 0.3-4.2). The pituitary releases more TSH if the level of T4 (thyroxine) in the blood is low , to try and stimulate the thyroid gland to make more T4 and thereby more T3.

A raised level of TSH and a low level of T4 indicates an under-active thyroid or hypothyroidism. An over-active thyroid is hyperthyroidism which causes bodily functions (metabolism) to speed up.

It is possible to measure T4 and T3 in the blood, and conventional endocrinologists maintain that these measurements taken together are sufficient to detect an

underactive thyroid. But a minority of specialists in the UK and USA maintain that measuring TSH, T$ and T3 in the blood is not sufficient. They recommend testing urine and saliva to deduce the amount of T3 and T4 which has actually been used over a 24-hour period, which may produce very different results from standard blood tests. The NHS in the UK "no longer do biochemical assays for Reverse T3, which some practitioners believe is essential.
A naturopath writes: "I do not know how to treat hypothyroidism effectively without reference to Reverse T3 (rT3) levels. The major cause of Reverse T3 dominance is prolonged stress which results in high levels of cortisol, the main hormone released by the adrenal glands in response to stress.

Elevated cortisol inhibits conversion of T4 to T3, reducing active T3 levels. T4 is instead converted to Reverse T3, an inactive form of T3 (triiodothyronine).

Reverse T3 dominance may persist even when stress levels settle down and cortisol levels return to normal. This is because T3 continues to inhibit the conversion of T4 to T3, perpetuating production of the inactive T3 hormone. Reverse T3 has the same molecular structure as T3 but is its mirror image and fits into the cellular receptor upside down, preventing the active T3 from binding to the receptor site, so prolonging its adverse effect even when no longer being converted from T4. Conventional blood tests measure T3 but do not distinguish between T3 and Reverse T3. T3 levels may appear normal but a significant part of that may be the inactive form giving a false diagnosis of thyroid gland activity" .

DIVINITÁ™-BIOPOLYM contain all the nutrients required to feed the endocrine system including the thyroid. Although iodine is often thought to be the most important factor, equally the balance of micronutrients involved in the delicate metabolic processes which feed the thyroid is critical. Other nutrient deficiencies may be the cause of many hypo- and hyper-thyroid problems. Nutrients critical to thyroid health are iodine, selenium, tyrosine, zinc, copper, vitamins A, B2, B3, B6 and C - all of which are present in an ideal natural balance in DIVINITÁ™. Deficiencies in the trace elements selenium and copper (and many others) are common especially where farming practices do not replenish soil levels of these micronutrients.

Some biodynamic and organic food has been shown to contain better nutrient levels but this can only be where the 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 DIVINITÁ™ at 2 Food Capsules per day (twice the micronutrient maintenance intake or 2g 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".*

In cases of overweight, and particularly in stubborn cases and in obesity, it is vital that weight reduction and detoxification be carefully controlled because of their potentially harmful effect on thyroid hormones. Canadian research which started in the late 1990s showed that environmental toxins are attracted to and stored in the body fat cells, and that weight loss without proper detoxification leads to these chemicals being released into the bloodstream.

As blood levels rise, levels of essential thryoid hormones which are necessary to maintain efficient metabolism fall dramatically - a process called adaptive thermogenesis. This leads to a concomitant reduction in muscle oxidative enzymes which determine how efficiently the muscles use energy, resulting once again in energy being stored as fat. Corresponding cycles may be set up where industrial chemicals which act like hormone disrupters profoundly affect several aspects of metabolism and appetite control which may lead to obsessive over-eating and further dietary imbalance.

DIVINITÁ™ Food Capsules and Food Granules may make a significant contribution at high levels for periods of six months or more through their contribution in cleaning out environmental toxins and dissolving fats in the blood; helping restore hormonal balance,

particularly in the thyroid; assisting gradual weight regulation, and the overall restoration of homeostasis.
Medical history charts the rise and fall and rise again of iodine's place in thyroid and hormonal balance and its medical use in general. During the first half of the 20th century and in the old pharmacopeias, the recommendation for iodine supplementation was 12,500µg - 37,500µg (12.5 - 37.5mg) elemental iodine. Iodine was used extensively among British and American physicians for both hypo- and hyperthyroidism (118). But research published in the USA in 1948 may have wrongly attributed the cause of hypothyroidism and goiter to the blocking of thyroid hormone synthesis by excess iodine (116) and may have led to the arbitrary definition of levels for daily iodine supplementation in 1969 of 200µg (0.2mg), where 2000µg (2mg) was deemed to be excessive.

This was published against the backdrop of the wholesale introduction of iodized salt as the standard for iodine supplementation in the 1950s, along with chlorine in drinking ater and other political/industrial dietary interventions for the supposed good of the general population. The daily amount of iodide absorbed from iodized salt was 200-500 times less than the amount of iodine/iodide previously recommended widely among physicians in the USA. "The man-made organic forms of iodine are extremely toxic, whereas the inorganic non-radioactive forms are extremely safe...however, the safe inorganic, non-radioactive forms were blamed for the severe side effects of organic iodine-containing drugs".

Despite this confusion, a study of 1,368 patients with fibrocystic disease of the breast published in 1993 reported the beneficial effects of 5mg iodine ingested daily for approximately one year. No adverse effect on the thyroid was observed in some 4,000 patients supplemented with iodine for as long as three years with a daily intake ranging from 12,500 µg to 50,000 µg.

Literature research conducted by Dr Guy Abrahams showed that 60 million Japanese consume a daily average 13,800 µg (13.8mg) of elemental iodine, and Japan is one of the world's healthiest nations based on overall well-being and cancer statistics . "Either the Japanese are mutants, capable of thriving on toxic levels of iodide, or we have been grossly deceived, and the human body needs at least 100 times the RDA, which was established very recently in 1980 and confirmed in 1989".

There is no international agreement on a maximum safe daily intake. World Health Organization guidelines place a safe maximum daily intake at 1000 µg whilst the UK Government adheres to a RDI / RDA (recommended daily intake / allowance) of 150 µg over 10 years of age whilst in America this is 200 µg. UK Government statistics place the average daily consumption of iodine from 'an average diet' at 250 µg per day.

The British Health Food Manufacturers Association advises that food supplements should not deliver more than 500 µg per day which amounts to about 750 µg (0.75mg) per day if the government's 'population average daily intake' is added to the HFMA figure. Few cases of toxicity have been reported in people with intakes of up to 5,000 µg (5mg or 0.005g) per day although transient mild effects have been demonstrated in individuals who were previously deficient in iodine. Normal subjects with an intake of 1000-2000 µg per day showed increased iodine concentration in the thyroid but no other changes.

In 1991 the UK Government's Department of Health's Panel on Dietary Reference Values of the Committee on Medical Aspects of Food Policy recommended that the safe upper intake should not exceed 1,000 µg (1mg) per adult per day over 10 years of age - or 17 µg (0.017mg) per kilogram of body weight.

"In all species studied the tolerance is high relative to normal dietary iodine intakes, pointing to a wide margin of safety for this element"

The oblation of the thyroid gland in favor of introducing the antiarrhythmic drug Amiodarone (a toxic form of sustained-release iodine) became effective when the body has accumulated approximately 1.5g (1,500,000 µg) of iodine - exactly the amount of iodine retained by the human body when iodine sufficiency is achieved following orthoiodosupplementation.

"The implication of such observation was that an iodine/iodide-loading test could be developed to assess not just thyroid sufficiency for iodine but requirement of the whole human body for that essential element... To achieve sufficiency within three months, most subjects required 37,500 µg - 50,000 µg per day (37.5 - 50mg), and some obese and diabetic subjects required even more than 50,000 µg per day into achieve and maintain sufficiency".
Obesity increases the requirement for iodine and up to 100,000 µg (100mg) of elemental iodine per day may be required to achieve and maintain sufficiency. Another factor involved in the increased demand for iodine is the presence of excessive amounts of goitrogens from the diet and lifestyle (substances harmful to the thyroid), for example smoking...which interferes with the sodium/iodide symporter function...and

fluoride...which interferes with the uptake of iodide by the thyroid gland symporter system (and it is suggested that) fluoride causes oxidative damage to the halide-binding site of the symporter...and bromide...and potassium perchlorate (which it is suggested may be) in dairy and breast milk.

"In patients on thyroid hormones, orthoiodosupplementation resulted in a decreased requirement to much lower levels of thyroxine and in some cases resulted in the complete discontinuation of this hormone. This decreased requirement for thyroid hormones...was (also) observed in a female patient with total thyroidectomy, suggesting that iodine not only improves thyroid function but also has an effect at the target organ level".

DIVINITÁ™ can contribute to normalizing metabolism and the hormone system, and as the richest source of inorganic iodine is of special interest in cases of iodine deficiency problems such as hypothyroidism, and to vegans and vegetarians who may intake less than half the RDA.

Specific useful papers include: Iodine intake and iodine deficiency in vegans as assessed by the duplicate-portion technique and urinary iodine excretion, Lightowler and Davies, British Journal of Nutrition (1998), 80, 529-535; Increased risk of iodine deficiency with vegetarian nutrition, Remer, Neubert and Manz, British Journal of Nutrition (1999), 81,45-49; Are vegetarians an 'at risk group' for iodine deficiency?, Davidsson, British Journal of Nutrition (1999), 81, 3-4; The elimination of iodine deficiency in the UK: a story of iodization by default, Phillips, IDD Newsletter, February 1998; Iodine supply in Germany, Meng and Schindler, IDD Newsletter, May 1998; USA examines its iodine nutrition, IDD Newsletter, November 1998; Iodine deficiency in France, Valeix, Zarebska, Preziosi, Galan, Pelletier and Hercberg, The Lancet, Vol 353, May 22, 1999. Useful Website locations include: http://209.10.106.162/nutrition%5Fsupplementation/minerals/Iodine.html; http://209.10.106.162/nutrition%5Fsupplementation/minerals/index.htm; http://www.ncbi.nlm.nih.gov/PubMed/; http://www.navigator.tufts.edu/; http://www.thorne.com/index.html; and http://www.pitt.edu/~cbw/altm.html.

Note: We have quoted at length from Dr Guy Abrahams because he is a credible and still current researcher in this field. Dr Abrahams is a former Professor of Obstetrics, Gynecology and Endocrinology at the UCLA School of Medicine, currently developing assays for the measurement of iodides in biological fluids and orthoiodosupplementation in medical practice.

He has research Awards from Pharmacia, Sweden (1980), the University of Liege, Belgium (1976), and the Canadian Association of Clinical Chemists (1974). He pioneered assays

used to measure steroid hormones in biological fluids and nutritional programs for women with PMT syndrome and post-menopausal osteoporosis, now the most widely used dietary programs among American obstetricians and gynecologists.

ULCERS

(See above under Helicobacter)

VEGAN AND VEGETARIAN DIETS

(See also above under Iodine Deficiency)

DIVINITÁ™ 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 alg® to B12-deficient rats significantly improved their vitamin B12 status. The results suggest that algal vitamin B12 is a bioavailable source for mammals, of special value to vegans and vegetarians because the normal dietary sources of B12 are fish, meat and dairy products.

In spirulina the pseudovitamin B12 predominated. This is an inactive corrinoid and is not suitable for use as a vitamin B12 source (91). DIVINITÁ™ 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).

DIVINITÁ™ has a significantly more balanced and complete nutritional profile than other alg® particularly kelp as well as the green and red seaweeds.

WEIGHT REGULATION

(See also above under Detoxification, Diabetes, and Obesity)

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 DIVINITÁ™ detoxifying special polysaccharides may be involved.

"Seaweeds are useful in weight-loss programs 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, carrageenan, 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".

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

Research reported in The Ecologist magazine points to environmental pollutants being stored in body fat cells. Weight loss without proper detoxification may lead to these chemicals being released into the bloodstream. As blood levels rise, levels of essential thyroid hormones necessary to maintain efficient metabolism, can 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 DIVINITÁ™ may have 3 uses here:

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

In 2007, researchers at Hokkaido University, Japan confirmed that fucoxanthin, an antioxidant carotenoid pigment in brown wrack seaweeds such as DIVINITÁ™ fucus and ascophyllum, significantly reduced fat tissue in laboratory-fed rats and mice which lost 10% of body fat, mainly around the gut. In obese animals, the compound appeared to stimulate a protein called UCP1 which causes fat to be broken down.

The protein is found in a type of fat called white adipose tissue, which is responsible for the thickening of the girth dubbed "middle-age spread". Research has shown that excess amounts of fat around the midriff are particularly linked to heart disease and diabetes. The pigment also caused the liver to produce dicosahexaenoic acid (DHA), which can help cut levels of 'bad' cholesterol associated with diabetes, obesity and heart disease. When combined with soybean oil, results were comparable to supplementation with fish oil. No adverse side effects were seen in the animals used in the study . Prior work on

fucoxanthin by the same researchers showed that it helps promote the death of human prostate cancer cells in culture.

WHEAT INTOLERANCE

(See above under Detoxification, Helicobacter, IBS, Indigestion)

The antioxidant E vitamin is naturally present in DIVINITÁ™ (approx. 0.23mg/g) with the complete set of isomers otherwise found only in seed oils like wheat germ.

DIVINITÁ™ are entirely wheat and gluten free, and are beneficial for the intestinal tract, both for their physical properties (e.g. the soothing effect of the polysaccharides) and their nutritional properties (e.g. their beneficial effect on the gut flora and remarkable balance of all the nutrients).

EFFICACY AND INTAKE

DIVINITÁ™ Food Capsules and DIVINITÁ™ Food Granules are a unique granular mix of 3 of DIVINITÁ™ wild Arctic wrack seaweeds ascophyllum nodosum, fucus spiralis, and pelvetia canaliculata. These mixed seaweed products were developed not only for daily use in the general population to balance the overall nutritional profile, but for use at high levels in therapeutic interventions.
During DIVINITÁ™ first decade 1998-2008 an important finding has been that whereas the recommended daily intake of 0,5 gram per day (1 Food Capsules) appears to be be sufficient to provide a balanced yet significant input of all the micronutrients, the most effective therapeutic use has been found - largely by practitioners' experimentation in clinical practice - to correspond with the statistics for daily intake in the traditional Japanese diet.

In 1964, Japanese seaweed consumption was 4.5 grams per day (providing 3.1mg iodine*). This equates to 4,5 Food Capsules per day, which is significant because it falls exactly mid-way between the 3 Food Capsules commonly used by7 many practitioners (in our present knowledge) addressing treatable conditions ranging from cancer management to urinary tract infections, and the 6 Food Capsules per day being used by practitioners in extreme cases whether of severe toxicity or stubborn weight loss.

*the iodine content of the equivalent intake of DIVINITÁ™ Food Capsules and Food Granules would be typically 1.75mg; in DIVINITÁ™ Iodine+ Capsules and Culinary Ingredient 3.15mg; in DIVINITÁ™ Salad & Condiment 1mg because of the different varieties of seaweed used in these products

Although later statistics show mainland Japanese seaweed consumption to have risen (e.g. to 14.5 grams per day in 2008) this increase is likely to be distorted by increased commercial products like sushi in a modern urban rather than traditional dietary context.

Whilst not wishing to draw a parallel, it may be noted that whilst US life expectancy is 77.85 years (48th in 226 countries surveyed - www.cia.gov/library) in Japan it is 81.25 years, the highest of all the industrialized nations. Infant mortality in Japan, like breast cancer until recently, is the lowest in the world, half the US figure. The US has the highest incidence of breast cancer in the world .

A 'FOUNDATION FOOD'

In permanent everyday use, DIVINITÁ™ 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.

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 1 capsules per day.

The Food Capsules and Food Granules are particularly balanced and safe for permanent daily use, including during pregnancy and in children. The contents of one capsule can be mixed into infant feed. In cases of severe debility and gut dysbiosis, DIVINITÁ™ have been readily ingested and in some cases have proved to be the only food not rejected by the patient.

The grains of DIVINITÁ™ Culinary Ingredient can be added into the diet in numerous foods and DIVINITÁ™ Salad & Condiment can be soaked in water and added to warm vegetables or cold salads, chewed in their dry state or simply ground onto food alone or mixed with other condiments, herbs and spices. These two products represent two of the 3 seaweed varieties used in the Food Capsules and Food Granules, so can be used to complement or supplement these where more convenient or less expensive to use.

Wild food celebrity Fergus Drennan reports that of 208 people who tried seaweed including children only one disliked it. Of these 50 were children.

DIVINITÁ™ DISTINCTIVE NUTRITIONAL PROFILE

DIVINITÁ™ mix of wild seaweed varieties achieves an optimum nutritional profile without the excessive iodine often associated with single varieties 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. DIVINITÁ™ should not be confused with fresh water alg® (like spirulina, blue green alg® 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 and they vary significantly between different commercial brands . Nor should DIVINITÁ™ be confused with 'kelp' (commonly laminaria species) which for an equivalent daily intake contains excessive iodine (see Table 1 below).

"Given that is is possible to upset the balance between specific minerals and trace elements, I would suggest that if daily supplementation is considered, it should be derived from a naturally-occurring sea / food source" .

SEAWEED IN DIETARY BALANCE

Traditional Japanese and macrobiotic diet classifies seaweed as neither yin nor yang but 'moderate' and thus suitable for "regular, occasional, or infrequent use as part of a balanced daily way of eating".

"Seaweeds, sea moss, and river moss have traditionally been eaten all over the world. They are soft and flexible, yet constantly move and bend to balance life in the water. In comparison, land plants are fixed in the soil, often have rigid stalks, stems or leaves, and tend to be brittle. As a result of growing in an alkaline environment, sea vegetables are strengthening to the blood and are especially good in helping to maintain or restore suppleness and flexibility to the arteries and other blood vessels. Some contain sodium alginate, a compound that can bind and eliminate radioactive particles and other toxins from the body. Sea vegetables are natural detoxifiers"

The macrobiotic diet places seaweed along with whole grains, vegetables and beans within the main portion of a pyramid of foods for regular daily use, even though they may

constitute less than 2% of volume . Based on 1 -2 kgs food per day this would mean 5-10 grams per day of seaweed.

"From the point of view that you are what you eat, we absorb the energy and vibration of the foods we take in, as well as the nutrients and other material components. The macrobiotic way of eating emphasizes keeping a calm, peaceful mind in every step of the agricultural and food preparation process.

High quality food is not only pure, whole, natural, and free of chemicals, irradiation, and GM organisms, but is also grown, processed, and prepared in a harmonious spirit. Traditional farmers serenaded their crops; people used slow, natural methods of processing; and cooks put strong healthful energy into their cooking with their thoughts and prayers... A return to a more natural way of eating that respects the lifegiving quality and energy of food is essential to recovering and maintaining our health, refined consciousness, and high spirit".

Hippocrates observed: *"How can any physician possibly hope to health he diseases of mankind who does not know the different grains, how they are planted, harvested, cooked and combined with other foods, and the effects they have on all who eat them?"* To heal cancer, Hippocrates warned against surgical intervention.

He said taking the tumor out does not address the underlying origin or cause of the imbalance; furthermore, it weakens the patient and makes healing more difficult. Rather than intervening into the body's own healing processes, he recommended a natural approach. In addition to dietary change, which was his foundation, he advised environmental adjustments, improving human relations, and simple spiritual practices.

5000 years ago in The Yellow Emperor's Classic, the world's oldest medical book, set down during the reign of the first Chinese dynasty, Ch'i Po, a physician and healer teaches a young, headstrong Emperor that the heart, liver, lungs and other organs and functions find their exact correspondence in society.

Learning how energy flows in the human body (the microcosm) was the key to understanding its circulation and effect in the world (the macrocosm). Ch'i Po defines health as bringing together the two universal energies which make up all things (yang and yin, or heaven's and earth's forces), and that the best way to maintain our daily health is through proper food selection and preparation. If the Yellow Emperor is to become a great ruler bringing peace and prosperity, he must first govern himself.

If he cannot sustain physical and psychological health, keeping a calm, clear mind and exercising sound judgement, inevitably the kingdom will decline into chaos and disorder.

DAILY INTAKE

For a balanced nutritional intake in the general population, 1 capsule daily each morning, before ingesting food, on a permanent basis, except when the subject is regularly engaged in physical exertion, pregnant or nursing, recovering from illness, or when health or immunity is exceptionally compromised, or when specific treatment is given, when a maximum of 2 capsules may be considered appropriate for relatively short periods of time.

For heavy metals and radiation detoxification up to 3 capsules daily (e.g. 2 with each meal) for at least 8 weeks, and thereafter 2 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, 1 capsule daily is an adequate maintenance intake.

In children under 10 years of age, 1/2 capsule each morning, preferably with food. In infants from 6 months to 4 years, the powder from 1/4 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 DIVINITÁ™ , 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 to the subject from between 6 and 12 months when underlying causes rather than symptoms begin to be addressed.

NUTRITIONAL PROFILE

Table 1: Typical nutritional profile per 1 gram DIVINITÁ™ Food Capsules and DIVINITÁ™ Food Granules (2 Food Capsules or 1/4 teaspoon Food Granules)

Protein 75mg • Carbohydrate / fiber 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) 178gg, B group (including B12 Cyanocobalamin 0.004gg, Bc Folic and Folinic acid 0.6gg, B1 Thiamine 0.3gg, B2 Riboflavin 7.5gg, Niacin (anti-pellagra) 20gg, Pantothenic acid, B6 Pyridoxin, Choline) 8.9gg, C (antioxidant) 1.25mg, D (Cholecalciferol) 0.01gg, E (antioxidant) including the complete set of isomers 0.23mg, H (Biotin) 0.30gg and K (Menadione) 10gg • 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 5.4gg, Copper trace, Fluorine 0.2mg, Germanium trace, Gold trace, Iodine 390gg, Iridium trace, Iron 575gg, Lithium trace, Manganese 0.03mg, Molybdenum 0.65gg, Platinum trace, Rubidium trace, Selenium 0.15gg, Silicon 1mg, Silver trace, Tellurium trace, Titanium trace, Vanadium 2.3gg 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 artificially formulated such as the phenolic compounds including free phloroglucinol, fucophorethols, and phlorotannin derivatives.

1g = 1000mg = 1000000µg

Table 2: Typical nutritional values per 100g

Protein7.5gCarbohydrate55gSugars5gFat4gSaturates2gFibre5g

Sodium3.5g

Moisture12-15%

Energy309 kcal (1280 kJ)

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