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ACTIVE INGREDIENTS USED IN MANY OF STEGGALL NUTRITION'S PRODUCTS

Hydrolysed Wheat Protein

The active component is glutamine peptide. It helps restore damaged muscle tissue associated with gym exercises by stimulating protein synthesis. It is a conditionally essential amino acid, which means it can be synthesised according to required needs. When the body is stressed such as with intense physical activity the immune and gut cells show increased demand. Plasma glutamine levels may drop below physiological levels, resulting in a situation of imbalance and increased vulnerability to infection. Extra glutamine from the diet is required and it is provided by this vital ingredient.

Lactoferrin

Lactoferrin is a whey protein that is very rare and very expensive, occurring in cow's milk at an average level of 0.02%. A separation technique is used to isolate the Lactoferrin in its natural form.

How Lactoferrin Works

Lactoferrin is a single glycoprotein and possesses two metal binding sites, each of which can bind a ferric ion (Fe^2). In the native state Lactoferrin is only partly saturated with iron (8 - 30%) which is physiologically important because iron can be chelated, reducing the amount of available free iron.

Main Benefits

- ✧ **Anti-bacterial activity.** This reduction in the amount of available free iron inhibits growth of undesirable bacteria that have a strict requirement for iron. Amongst these are members of the Enterobacteriaceae, including pathogenic strains of E. coli, that can cause diarrhoea. Other more welcome bacteria such as the lactobacilli do not have the same demands for iron and will proliferate in preference to the undesirable bacteria. A peptide that is released from Lactoferrin by the action of acid proteases (pepsin) is highly bactericidal against a range of pathogenic organisms such as listeria, salmonella, pseudomonas, aeruginosa and campylobacter.
- ✧ **Iron transport and absorption.** Lactoferrin's high affinity for iron means that it can transport iron effectively to the small intestine where it combines with specific cell surface receptors, resulting in an increase of iron bioavailability.
- ✧ **Antioxidant.** Free iron acts as a catalyst for generation of free radicals. Absorption of free iron by Lactoferrin reduces the amount of iron available to generate free radical activity.

There are additional benefits of Lactoferrin such as cell growth promotion and improvements in immune function, but these benefits mainly relate to infants.

Why use Lactoferrin when iron supplements are so readily available?

Iron deficiency is one of the most common nutritional disorders in the world and affects approximately 11% of the population in industrialised countries. It may lead to severe anaemia, resulting in reduced work capacity, diminished learning ability and increased susceptibility to infection.

When considering bioavailability of iron one routinely distinguishes between heme-bound iron (animal origin) and non-heme iron. The bioavailability of heme-iron is high at 15 - 25% whereas the bioavailability of non-heme (inorganic iron salts) is much lower at 1 - 10% due to poor solubility and binding to other components in the diet. Children and women (especially pregnant women), the elderly and vegetarians are the groups at risk. Vegetarians are especially vulnerable because they are denied the high bioavailability of heme-iron from meat protein. Iron is quite abundant in many vegetables and green leafy vegetables, legumes, nuts and whole cereal grains. All have between 2 - 4mg per 100gms. Most fruit contains 0.3 - 1.2mg per 100gms. We could be excused for believing that a vegetarian diet contains abundant iron, but poor absorption from the intestine makes it difficult to achieve the desired level of 10 - 14mgs per day. Many people are conscious of this shortfall and supplement their diet with inorganic salts such as ferrous sulphate and ferrous gluconate. In many instances there may be a detrimental effect because of the amount of free iron made available to induce undesirable bacterial and free radical activity.

Another group that struggles with correct iron levels is athletes. When iron depletion occurs the capacity for exercise is limited due to insufficient oxygen delivery. Supplementation with iron salts may restore iron levels but often athletes over compensate and are faced with the resultant problems of excess free iron. Female athletes are more at risk because they lose more iron than men (1.4mg c/w 0.86mg) per day, and their average intake is lower at 9 - 10mgs/day. (RDI is 12mgs/day).

Sports and fitness magazines often refer to the fatigue problems associated with low iron levels and toxicity problems with high iron levels. However, there is no reference at this stage in commercial magazines to Lactoferrin and it would appear to be an ingredient that offers athletes tremendous assistance in controlling iron levels. There are many research articles about Lactoferrin but its commercial application is slow, probably due to the high cost. We understand it is being used in a limited number of sporting type products in some countries and it would appear there is a real opportunity in the health/sports area of the Asia/Pacific market.

Fructooligosaccharide (also referred to as inulin)

A resistant starch derived from chicory root. It is a soluble dietary fibre which ferments in the large intestine, creating an environment that stimulates bifidus and other beneficial bacteria by a factor of 5 - 10.

Live Culture

Through use of a microencapsulation technique we have preserved viable lactic acid producing bacteria that act symbiotically with the fructooligosaccharide. A multitude of benefits result and amongst these are:

- ✧ Short chain fatty acids are produced, lowering pH levels and providing an energy source for the growth and maintenance of large intestine cells. This process leads to differentiation of cancer cells, a vital step that is required before cancer cells can be killed.
- ✧ Improvement of lactose digestion, lowering of cholesterol, reduction of diarrhoea duration and stimulation of immune system.

- ✧ Pathogenic and abnormal micro-organisms are kept low or excluded.
- ✧ Formation of toxic and carcinogenic substances is avoided through suppression of abnormal bacterial enzyme activity.

Encapsulated Marine Oil

The active ingredient is Omega 3 Fatty Acids and the two of prime importance are Docosahexaenoic Acid (DHA) and Eicosapentaenoic Acid (EPA). These ingredients work by significantly reducing the serum triglyceride level, the LDL-cholesterol level, blood pressure, platelet aggregation, and by increasing the level of HDL-cholesterol.

Alpha linolenic acid is an Omega 3 Fatty Acid and the starting point for the synthesis of EPA through to DHA. There has been much publicity about alpha linolenic acid recently, particularly in relation to its abundance in cereals such as linseed and sunflower seeds. Manufacturers claim these cereals are high in Omega 3 Fatty Acids and should be included regularly in our diet.

A diet high in linseed is certainly beneficial but perhaps misleading in the sense that Omega 6 Fatty Acids require the same enzymes as Omega 3 Fatty Acids. When the two are competing against each other there is a preference towards the Omega 6 Fatty Acids and synthesis into EPA is inhibited. There is an abundance of Omega 6 and it is not a nutrient we struggle for. Typical Western diets have a ratio of Omega 6: Omega 3 of 10:1 or more and a preferred level is 5:1 or less. Consumption of linseed will increase overall levels of both Omega 6 and Omega 3 but the ratio will swing in favour of the Omega 6, which is undesirable.

This balance may be corrected by consuming EPA and DHA, bypassing the conversion from alpha linolenic acid. There is no demand on the enzyme system or competition with any Omega 6 Fatty Acids. EPA and DHA are mainly found in cold water fish such as salmon, sardines, mackerel and herring. We have encapsulated the oil in a starch matrix to provide a concentrated source of EPA and DHA. This results in benefits to the following organs/conditions:

- ✧ ***Healthy Hearts.*** Decreases blood stickiness so the tendency to form clots and block arteries is minimised. Delays hardening of arteries, regulates heart rhythm and lower blood pressure.
- ✧ ***Brain.*** DHA is essential for the development of the brain and eyes in an unborn child. Most of the DHA accumulates in the unborn child's central nervous system in the last few months of pregnancy. It is during this period and the first few months after birth that the brain is in a rapid stage of growth. Therefore regular consumption of Omega 3 Fatty Acids is recommended for the mother, both during pregnancy and after birth. Approximately 50% of pregnancies are unplanned so it is not unreasonable to expect a dieting woman to become pregnant.
- ✧ ***Arthritis.*** Omega 3 Fatty Acids decrease production of hormone-like compounds in the body that lead to inflammation.
- ✧ ***Diabetes.*** People with diabetes are at a higher risk of developing heart disease. The various attributes of Omega 3 Fatty Acids reduces this risk.

Natural Mixed Carotenoids

Consists mainly of beta-carotene which is the precursor to vitamin A. However, they are much more powerful antioxidants than vitamin A and diets high in beta-carotene reduce the risk of degenerative diseases much more than do vitamin A rich diets. Furthermore, beta-carotene is exceptionally safe - the body converts it to vitamin A only as it is needed - so there is no risk of overdose.

Research has also found that a diverse selection of dietary antioxidants (beta and alpha carotene, cryptoxanthin, zeaxanthin and lutein) functions synergistically and offers better protection against free radicals than do large amounts of single antioxidants.

The main benefits associated with regular consumption of mixed carotenoids are:

- ✧ Reduced risk of cardiovascular disease.
- ✧ Protects immune system cells from free radical damage.
- ✧ Protection against various forms of cancer.

Natural Mixed Tocopherols

Contains the four tocopherols which occur naturally in plant oils. These are d-Alpha, d-beta, d-gamma and d-delta. Synthetic vitamin E (d-alpha tocopherol) is a mixture of eight stereo isomers and they have a lower biological availability than vitamin E from natural sources. This effectively means that with natural vitamin E there is approximately double the absorption and retention rate in the body.

A strong antioxidant, particularly effective against reducing free radical activity associated with lipid peroxidation from poly unsaturated fatty acids. The resultant benefits of vitamin E supplementation are wide and varied and are primarily as follows:

- ✧ Stimulation of the immune response.
- ✧ Decreases severity of inflammation, PMS and circulation irregularities.
- ✧ Inhibits conversion of nitrites which promote tumours.
- ✧ Strong antioxidant activity which may delay onset of cancer.

Magnesium

People who use the same muscles regularly, such as athletes and gardeners, often suffer from acute muscle spasms known as cramps. When magnesium levels are low the body is forced to draw it from the muscles, resulting in stiffening. Adequate magnesium intake alleviates muscle cramps and stiffness.

L-Carnitine

An amino acid derivative that is primarily found in meat and dairy products. It is a useful sporting and medical dietary aid, and main uses are for heart problems such as ischaemic heart disease, angina, arrhythmias, reduction of blood cholesterol levels and improving athletic performance by increasing lipid utilisation and conserving muscle glycogen supplies.

Selenium

An essential trace element that is often lacking in Australian diets, possibly because of our low fish consumption. Selenium functions as an integral part of the enzyme "glutathione peroxidase" which prevents the generation of oxygen free radicals that cause the destruction of polyunsaturated fatty acids in cell membranes. Its strong antioxidant properties have linked it with cancer and some studies have shown an inverse relationship between selenium levels in forage crops and cancer mortality rates by geographical area.

Siberian Ginseng

This herb has a wide range of pharmacological benefits due to a facilitating influence on the hypothalamic/pituitary/adrenal axis. Its main claims are improved stamina, alleviation of symptoms of tiredness, exhaustion and stress, regulation of blood pressure and improved immunity.

Ginkgo Biloba

Contains amino acids, flavonoids and terpenoids which produce the following properties:

- ✧ Antagonises platelet activating factor (PAF), reducing platelet aggregation and decreasing production of oxygen free radicals.
- ✧ Increases blood flow and reduces blood viscosity.
- ✧ Has been extensively researched in cerebral insufficiency and is conclusively effective against poor concentration and memory, confusion, dizziness, headaches and lack of energy. However, it is not effective for such symptoms if they are not associated with cerebral insufficiency.

Spirulina

Contains a high level of protein and is the highest known source of beta carotene (vitamin A) and vitamin B12, which are of great value to vegetarians. In addition it supplies gamma linolenic acid (GLA), linolenic acid, and arachidonic acids, iron, the essential amino acids, vitamins, minerals, cell salts and enzymes.

Lecithin

Emulsifies fats and assists the body to use them effectively.

Barley Grass

Rich in proteins, complex carbohydrates, chlorophyll and essential vitamins, minerals and enzymes; including superoxide dismutase, believed to be an antioxidant which destroys free radicals. An excellent supplement for sports conditioning and endurance.

Echinacea Purpurea

Echinacea is a powerful antitoxin and antiseptic. It is used to provide temporary relief from the symptoms of cold and flu.

Slippery Elm

Recognised for its healing and soothing action in minor irritations of the stomach and intestines. It is also used for its ability to neutralise stomach acidity and to absorb noxious gasses in the body. Due to its soothing action on the lungs, slippery elm is also considered valuable for the temporary relief of coughs.

Kelp

A gold mine of minerals and trace elements in abundance and in the correct natural balance. It is favoured as a food supplement because it is particularly rich in iodine.

Fenugreek

An ancient medicinal herb. Its seeds are classified as soothing and can be of benefit to the stomach and intestines. It is also a valued expectorant and decongestant and is rich in phosphates, lecithin and organic iron.

Milk Thistle

The active substances extracted from the black seeds of the milk thistle plant are collectively called silymarin. When these compounds are added to the diet they demonstrate strong antioxidant properties.

