OPTIMUM CHOICES, LLC
Healthy choices for people and pets

Immune System and Bio-Algae Concentrates (BAC)

(Russian research taken from www.themagicisbac.com)

How BAC boost immunity

Immunity as it relates to human or animal health, is a state of having sufficient biological defenses to avoid infection, disease, or other unwanted biological invasion. Immunity involves both specific and non-specific components. Beside this generic definition of immunity, there are dozen of others that are either focused on particular functions related to viral defense or defense against specific disease, etc.

I have chosen this "broader" definition as it fits with my holistic belief that each cell in the human or animal body carries its own immune protection system and when each cell is immunize, then the entire body is better protected.

Bio-algae concentrates (BAC) exhibit impressive immune stimulating and boosting properties. As with the previously mentioned regenerative properties of this superfood, its immune boosting powers are likely due to a variety of nutritional and energetic factors that contribute to cellular vitality and immunity.

Let us examine a few of these one at a time:

BAC awakens the genius within

When the cells of the body receive the nutrients and the resulting energy that they need, they like good virtuoso will perform their multitude of cellular metabolic activity; growth, repair, cleansing, regeneration, including protecting itself, and much more. When each cell of the organ performs its job well, then the organ will have a fighting chance to perform its metabolic activities such as blood sugar regulation in the good example that is the pancreas. But let us not forget that cellular and organ health functions are governed by the glandular level which itself is overseen by the "master gland", the hypothalamus located in the brain.

That BAC's nutrients efficiently nourish all the cells of the body including those cells of the hypothalamic region, there is no doubt. In the words of Dr. Michael Kiriac, it is in that sense, that BAC awakens the "genius" within. Several phytonutrients and pigments found in BAC like beta carotene, alpha carotene and astaxanthin have been proven in human clinical trials to penetrate the blood brain barrier and furthermore penetrate the blood iris barrier.

416 Plateau Parkway, Golden, CO 80403-1533
Phone: 303.271.1649 Toll Free: 866.305.2306 Fax: 303.271.1659
info@OptimumChoices.com http://www.OptimumChoices.com

BAC's chlorophyl protection powers
Because of its high chlorophyll content (higher then most foods), BAC is useful for the many conditions which benefit from chlorophyll's energy giving, purification, renewal, and anti-inflammatory properties. Control of viruses and fungi which sap energy, such as **candida-overgrowth, Epstein-Barr virus**, **chronic fatigue immune deficiency syndrome (CFIDS)**, and AIDS, is enhanced by the **immune-enhancing and antiviral qualities of chlorophyll**.

BAC's RNA / DNA's nucleic acids remarkable protection powers
There are yet more natural healing agents in BAC as found in another immune-boosting element in the algae of BAC: nucleic acids, found in RNA and DNA. These nucleic acids are critical for health and longevity:

The nucleic acid in the human body (RNA/DNA) is responsible for directing **cellular renewal, growth, and repair**. The amount of nucleic acid in the body decreases with age; in fact, insufficient nucleic acid causes premature aging as well as weakened immunity. Nucleic acid is depleted by lack of exercise, stress, pollution, and poor diet.

Replenishing RNA/DNA is therefore important to every aspect of bodily health and longevity. This particular aspect of RNA/DNA, which is measured by the controlled growth factor, **strengthens immunity** by improving the activity of T- and B-cells, which defend against viruses and other invading microorganisms, and macrophages, which **destroy cancer** and cellular debris in general.

The photosynthetic life giving pigments content of BAC
BAC's red algae hoematococcus and dunaliella contain high levels of nature's special pigments carotenoids and phycobilins. BAC contains astaxanthin, beta-carotene, alpha-carotene, lutein, lycopene, xeaxanthin, quercitin, b cryptoxanthin and many other pigments that offer powerful immunity and toxin shield against continuous pollution, toxins and stress. The algae hoemattoccocus in BAC is the highest source on earth of astaxanthin, a red pigment which is clinically proven to have hundreds of times more antioxidant power than vitamin E and vitamin C, and dozen of times more than that of beta carotene as found in carrots.

An incredible arsenal of antioxidants in Bio-Algae Concentrates
While the protein, mineral and vitamin value of bio-algae concentrates is impressive, these minute organisms are also rich in pigments that are bio-chemically important to life. Without pigments, organisms could not synthesize many of the enzymes necessary for balancing metabolism.

Bio-algae concentrates contains high level of enzymatic pigments and mixed carotenoids. In recent years, these pigments and carotenoids have received a tremendous amount of attention as potential anti-cancer and anti-aging compounds. Carotenoids are powerful antioxidants, protecting the cells of the body from damage caused by free radicals. Carotenoids, and specifically beta-carotene and alpha-carotene, are also believed to enhance the function of the immune system.

BAC contains high level of astaxanthin, the star of antioxidants
Astaxanthin is a pigment of the carotenoid complex found in the microalgae Haematococcus pluvialis and Dunaliella salina present in BAC. It is an oxygenated pigment called a xanthophyll. Its unique molecular structure gives it a superior antioxidant and immune system boosting capacity.

Astaxanthin is 40 times more effective as an antioxidant than beta-carotene, 500 to 1000 times more effective in inhibiting lipid peroxidation as an antioxidant than Vitamin E, has greater anti-inflammatory capability than Vitamin E, has almost 4 times the antioxidant capacity of lutein, is superior protection against UVA and UVB light-induced oxidative stress, is more stable in scavenging and quenching than b-carotene, canthaxanthin and zeaxanthin, is highly potent in enhancing T1 and T2 helper cells and IgM and IgG (secondary immunity) production, is more effective than lycopene and lutein in enhancing liver microsome detoxification activity (enzymes that metabolize drugs), enhances the actions of Vitamins C and E in the body, and enhances the release of retinol (Vitamin A) from the liver when needed.

Phycocyanin in BAC enhances the immune system
One unusual phytonutrient with an important quantity in algae of BAC, is the natural blue protein pigment, called phycocyanin. This is the pigment which gives blue-green algae its blue cast. It may be found in concentrations as high as 7 percent in certain blue-green algae, as compared to 1 percent chlorophyll content most commonly found.

Because of this high content of phycocyanin, as a natural substance with an immune system boosting or anti-cancer effect, there is much research using algae. As such phycocyanin may be active in preventing a host of degenerative organ diseases by increasing immunity.

A Japanese patent states that a small dosage of phycocyanin daily maintains or accelerates normal control cell functions that prevents generation of malignancy such as cancer or inhibits its growth or recurrence.

Chinese scientists documented that phycocyanin stimulates hematopoesis (creation of blood), emulating the hormone erythropoetin (EPO). EPO is produced by healthy kidneys and regulates bone marrow stem cell production of red blood cells. They claim phycocyanin regulated white blood cell production, even when bone marrow stem cells are damaged by toxic chemicals or radiation.

(www.themagicisbac.com/page22-00.html)

Chlorophyll, the Sheppard of Light in BAC

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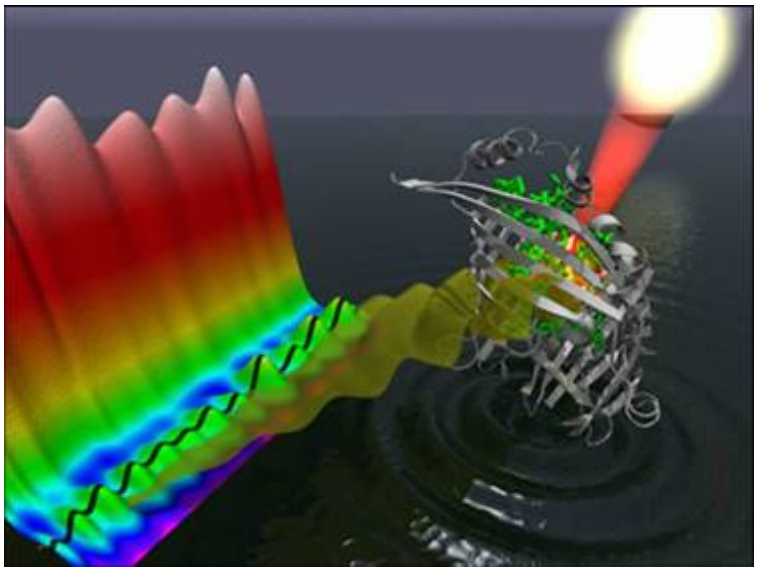
Many important natural substances are chelates. In chelates a central metal ion is bonded to a large organic molecule, a molecule composed of carbon, hydrogen, and other elements such as oxygen and nitrogen. One such chelate is chlorophyll, the green pigment of algae and plants. In chlorophylls the central ion is magnesium, and the large organic molecule is a porphyrin. The porphyrin contains four nitrogen atoms that form bonds to magnesium in a square planar arrangement.

There are several kinds of chlorophyll, the most important being chlorophyll “a”. This is the molecule which makes photosynthesis possible, by passing its energized electrons on to molecules which will manufacture sugars. All plants, algae, and cyanobacteria (blue-green algae) which photosynthesize contain chlorophyll “a”. A second kind of chlorophyll is chlorophyll “b”, which occurs only in “green algae” and in the plants. The “green algae” is the most diverse group of algae, with more than 7000 species growing in a variety of habitats.

BAC’s Chlorophyll for the Metabolism of Light / Energy

Energy are vital forces we associate with light having to do with liberating the sun’s forces from carbohydrates and lipids so we can use those forces to produce energy.



Through photosynthesis certain microalgae like cyanobacteria as contained in BAC are able to transfer sunlight energy to molecular reaction centers for conversion into chemical energy with near 100% efficiency.

Energy from light is received somewhat directly as sunlight, but it is received in much greater amounts from our food. The chemical energy stored by photosynthesis in carbohydrates drives biochemical reactions in nearly all living organisms. Releasing the forces of light from food requires a balance disassembly of starches, sugars, and fats that are the bearers of light.

Chlorophyll is the shepherd of light energy – in the central atom of the chlorophyll molecule is magnesium where the sun’s light is gathered for releasing the sugars, starches, and fats from which we will eventually get our energy. Magnesium is omnipresent in the catabolic steps in which we disassemble sugars and fats in our metabolic fire: the Krebs (citric acid) cycle.

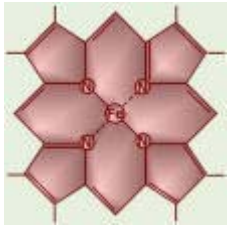
In this photosynthetic reaction (Krebs cycle), carbon dioxide is reduced by water; in other words, electrons are transferred from water to carbon dioxide. Chlorophyll assists this transfer. When chlorophyll absorbs light energy, an electron in chlorophyll is excited from a lower energy state to a higher energy state. In this higher energy state, this electron is more readily transferred to another molecule. This starts a chain of electron-transfer steps, which ends with an electron transferred to carbon dioxide. Meanwhile, the chlorophyll which gave up an electron can accept an electron from another molecule. This is the end of a process which starts with the removal of an electron from water.

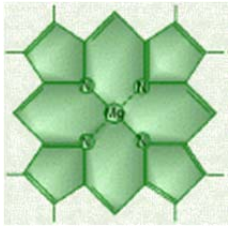
Thus, chlorophyll is at the center of the photosynthetic oxidation-reduction reaction between carbon dioxide and water.

Chlorophyll and Blood Regeneration

Chlorophyll is sometimes called “green blood” because of its similarity to the hemoglobin molecule found in human blood cells. In fact, both are constructed of almost identical molecular structure called pyrrole rings, and both substances are chemically known as “porphyrin pigments” by scientists.

The difference is that chlorophyll contains a magnesium ion at its core, while hemoglobin contains an iron molecule. Magnesium imparts a green color to the chlorophyll molecule and is involved in synthesis of other materials, while iron gives hemoglobin a red coloration and changes the function of the porphyrin molecule to respiration and breakdown of materials. But perhaps the most interesting connection between green foods and blood is the similarity in the structures of the two colored pigments, heme and chlorophyll.


Heme Molecule in Blood


Chlorophyll Molecule

There are many reasons why cereal grass and other dark green plants can be considered “blood-building” foods. The vitamins and minerals in cereal grass are essential to the synthesis and function of the components of healthy blood.

The biological relationship between these two molecules, though studied for over 60 years, is still not completely clear. It does appear, however, that small amounts of the digestive products of chlorophyll may stimulate the synthesis of either heme or globin or both in animals and humans.

What is so good about the chlorophylls in BAC?

Algae contained in BAC are the richest source of chlorophylls on planet Earth. BAC”s most visible pigments are chlorophylls. There is nothing more cleansing and detoxifying than chlorophyll. And people who follow Western diets (high in processed foods and animal foods) are in desperate need of cleansing and detoxifying.

Chlorophylls release ions when struck by the energy of sunlight. These free ions proceed to stimulate the biochemical reactions that form proteins, vitamins and sugars.

It is believed that if chlorophyll is ingested with sufficient iron, the magnesium can be displaced to yield a hemoglobin molecule. Experiments in Japan and Russia have demonstrated that algae have a marked positive effect on leukemia and anemia, possibly due to the conversion of chlorophyll into hemoglobin. Of course, the high nutrient density of Spirulina alone, especially the blood-building vitamins B12 and folic acid and the amino acids, are also useful in treating cases of anemia.

Chlorophyll has other positive benefits to the body. It increases peristaltic action and thus relieves constipation, and also normalizes the secretion of digestive acids. It soothes the inflammation and reduces the excess pepsin secretion associated with gastric ulcers.

During World War II, the drying action of chlorophyll and its antiseptic qualities made it a common first-aid measure to prevent festering of wounds. In addition, chlorophyll soothes swelling and promotes granulation, the process that regenerates new tissue over injuries.

Chlorophyll appears to promote regeneration of damaged liver cells, and also increases circulation to all the organs by dilating blood vessels. In the heart, chlorophyll aids in transmission of nerve impulses that control contraction. The heart rate is slowed, yet each contraction is increased in power, thus improving the overall efficiency of cardiac work. Here is something interesting: chlorophyll is known to help remove heavy metals from your body that have accumulated due to the ingestion of contaminated food products. Certain sea foods are especially known to contain dangerous levels of heavy metals like mercury, but these contaminants are also found in animal products and even non-organic crops. If you've been eating refined foods, you undoubtedly have mercury, cadmium, arsenic, lead, PCBs and other contaminants in your body. The chlorophyll in BAC actually helps remove those heavy metals from your body, which can have seemingly miraculous benefits to your health.

Another common source for contaminants is mercury fillings used by dentists. They call them "silver fillings," actually, since they do not want to openly admit they're still putting mercury — one of the most potent nerve toxins on the planet -- into the mouths of patients. These mercury fillings emit a steady stream of mercury vapor that gets absorbed into your body. Frequently, small bits of these mercury fillings crack, break off, and are swallowed with your food. In this way, nearly all dental patients in America and other "civilized" countries are subjected to routine mercury poisoning at the hands of their dentists.

BAC can help protect you against this mercury be escorting the mercury out of your body before it can do damage. If you take BAC before and after receiving dental work, you will help protect yourself from the toxic effects of mercury fillings. This is especially important if you decide to have your mercury fillings removed, as more and more people are doing. The very process of drilling them out results in a tidal wave of mercury exposure in your body. Consuming BAC offers considerable protection against the mercury bits you inevitably swallow during this procedure.

For example, many people undergo full-scale mercury filling removal. It requires several sessions in the chair, and we recommend using more BAC before and after each session. As a result, you will be much more protected from the ill effects of mercury removal.

Chlorophyll does much more than protect you from mercury, however an important one: it is also a general detoxifier that supports liver function so that your body can do a better job of eliminating toxins from your system.

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