



OPTIMUM CHOICES, LLC
Healthy choices for people and pets

Brain Function, Nervous System Disorders, Epilepsy and BAC (Bio-Algae Concentrates)

(Research taken from www.TheMagicsBAC.com)

An interesting study published in 1995 (Author: Sevulla) that showed an 81% improvement in the academic scores of children who took one gram of the algae spirulina daily for six months.

I'm not aware of other studies examining the link between micro-algae and intellectual function, but this study alone is interesting enough to warrant a closer look. An 81% improvement is dramatic, to say the least. And the dosage of spirulina used -- a mere one gram -- which is only 1/10th the recommended standard dosage for spirulina. What results could be achieved with bio-algae concentrates? We have many testimonials from parents and teachers of children that tell of the positive academic and behavioral changes after they begin consuming bio-algae concentrates. We will also cover the benefits for children and adults affected with Autism and ADD/HD later on.

Anecdotal results abound from people using bio-algae concentrates about how they feel more focus and clarity of brain functions. People share how their short term memory is better, that they remember telephone numbers, recall their dreams, etc. In orthomolecular medicine there are proven connections between nutrients and brain function and moods, even mental diseases. Several nutrient deficiencies are involved with depression and mental disorders like Autism, ADD/HD.

The mechanism of such dramatic improvements in brain function are very likely due to the presence of several nutrients and phytonutrients that have close affinities with the brain. Many micro and macro minerals, vitamins such as pro-vitamin A and the B complex are required daily for the brain to function optimally. All of us have nutrient deficiencies as some nutrients are not easily obtained from our diets or delivered to the brain due to aging related poor assimilation.

Bio-algae concentrates contain all known required nutrients and phytonutrients. As importantly their bioavailability is likely of the highest order as proven in clinical human trials and its beneficial results of usage proven in large clinical and industrial trials with animals and human. Of the many phytonutrients contained in bio-algae concentrates, let's focus on two: GLA and **phycocyanin** (a blue pigment).

Phycocyanin is known to enhance the functioning of the brain and nervous system. Furthermore, the presence of this pigment in plants and foods is extremely rare:

Important to note in the area of prevention, spirulina is richly supplied with the blue pigment phycocyanin, a biliprotein which has been shown to inhibit cancer-colony formation. Predominant blue pigmentation in food is rare. The chemical reality of spirulina's blue color is demonstrated by its effect in the brain. Here phycocyanin helps draw together amino acids for **neurotransmitter formation**, which **increases mental capacity**.

- *Healing With Whole Foods by Paul Pitchford*

Certainly the Gamma Linoleic Acid (GLA) content is another important factor. As I mentioned previously, the human brain is around 80% fat. Nerve tissues in the brain need "healthy" fats in order to function properly, and GLA is one of the healthiest fats you can consume. That's why human breast milk contains high quantities of GLA. In fact, breast milk is the #1 source of GLA on the planet, and spirulina as in bio-algae concentrates is #2.

Breast milk contains GLA because infant humans need to quickly build brain mass in order to boost their chances of survival. A bigger, better brain allows a child to more quickly comprehend language, social interactions, environmental cues, interpret sensory input, and so on. So mother's milk provides precisely the nutrients needed by infants to help them survive.

Cow's milk, on the other hand, is designed to help baby cows survive. That has a lot less to do with brain function and a lot more to do with helping grow a baby cow to several hundred pounds and enabling it to run more quickly. Cow's milk, not surprisingly, has virtually no GLA. Baby cow brains simply aren't as important to their survival as the brains of human infants.

That's also one reason why cow's milk is a terrible nutritional choice for baby humans. Cow's milk is the perfect food for baby cows, but a gross mismatch for the nutritional needs of baby humans. Even worse, the fact that adult human beings consume the mother's milk of another species is truly unique (bizarre?). No other mammal on the planet consumes the milk of other species, and every animal on the planet manages to "weans" itself off of mother's milk except humans. When I see adult humans drinking cow's milk, I always wonder why they're drinking baby food.

Getting back to the brain food topic, the phycocyanin content of bio-algae concentrates combined with its GLA content (the good fats that heal) provides a compelling reason to consume these micro-algae. The GLA feeds your brain and nervous system with the nutrients it needs to be healthy, while the phycocyanin inhibits tumorigenesis and increases brain functionality. It's a powerful combination, and it's one reason why I recommend that people consume bio-algae concentrates every day of their life. They're simply the most powerful offering of real and whole nutrients.

(Research taken from <http://www.themagicisbac.com/page17-00.html>)

BAC (Bio-Algae Concentrates) for nervous system disorders

(Research taken from <http://www.themagicisbac.com/page15-00.html>)

Phytonutrients and nutrients in bio-algae concentrates are most useful for improving growth patterns in children, maintaining health in old age, healing injuries, and initiating growth, repair and regeneration where it has been stunted from disease or degeneration, including **Alzheimer's disease, sciatica, palsy, seizures, multiple sclerosis, nervousness, and other nerve disorders.**

Some of the most remarkable healing properties clinically recorded for bio-algae concentrates: its ability to significantly increase the body's capacity to repair nerve tissues throughout the body. People suffering from degenerative nerve disorders typically report positive results from using bio-algae concentrates. This is because nutrients in bio-algae concentrates so efficiently reach the cells of the brain master glands, which in turn activates innate healing ability to grow and repair nerve tissue.

It's unfortunate that more research isn't available in this area, because I think this represents an exciting and promising area of nutritional research. If phytochemicals found in these billion-year-old plants can actually help human beings repair nerve tissue, what extraordinary uses might it be put towards? Could it help people with spinal cord injuries? Could it help stroke victims? Could it actually prevent Alzheimer's Disease in patients with high risk?

Unfortunately, these questions are not been addressed by mainstream researchers, and since nobody can patent bio-algae concentrates, it's unlikely that any drug company is interested in sponsoring the necessary research to answer these questions. After all, consumers can buy algae anywhere and even grow them given a significant effort. Drug companies have no way to control the market and, therefore, no way to profit from bio-algae concentrates.

For now, the best we can go on is the anecdotal evidence and growing number of case studies, which is actually quite substantial. It may hold tremendous promise in treating Autism, ADD/HD and the mental disorders now ravaging modern society:

In the developed countries where nutrient starvation takes place as a result of excessive refined food, intoxicants, and a glut of animal products, micro-algae (such as those found in bio-algae concentrates), used in conjunction with unrefined vegetable foods, are proving helpful in healing the many prevalent disorders of the nerves and brain.

- Healing With Whole Foods by Paul Pitchford

Gamma linolenic acid (GLA) in BAC stimulates master hormones

(Research taken from <http://www.themagicisbac.com/page9-01.html>)

Perhaps you've heard of GLA (gamma-linoleic acid) and DHA (docosahexaenoic acid). Human breast milk is high in GLA, probably due to the infant child's need for brain-building fats. And since many infants never gained the important nutritional benefits of their mothers' milk, they've

been GLA-deficient for their entire lives. The American diet of processed foods contains virtually no GLA. And low-carb dieters aren't getting any either, unless they specifically supplement it.

GLA is the second fatty acid in the omega-6 family. It has 18 carbons and three double bonds (with the first double bond positioned six carbons from the end). The third fatty acid in the omega-6 family is dihomo-gamma-linolenic acid (DGLA) with 20 carbons and three double bonds. Next comes arachidonic acid (AA) with 20 carbons and 4 double bonds. The Series 1 prostaglandins are made out of DGLA and the Series 2 prostaglandins are made out of AA. Thus, GLA is an important transition product for the production of these prostaglandins.

GLA as occurring in bio-algae concentrates exhibit impressive immune stimulating and boosting properties. GLA is not only known for regulating blood sugar and providing important nutrients to the brain; it also exhibits immune-boosting properties. In fact, according to Dr. Hass, author of **Staying Health With Nutrition**, GLA has been shown to be effective for the following health conditions:

- Cardiovascular disease - anti-inflammatory effect; reducing platelet aggregation, thereby reducing clotting; lowering blood pressure by decreasing vessel tone; cholesterol-lowering effect.
- Arthritis (rheumatoid arthritis and other inflammatory disorders) - anti-inflammatory effect; immune support; correcting possible EFA and GLA deficiency.
- Skin disorders (eczema, acne, dermatitis) - anti-inflammatory effect; EFA functions; immune support.
- Allergies, asthma - anti-inflammatory effect; EFA function; immune support.
- Multiple sclerosis - nerve conduction; correction of possible EFA and GLA deficiency; immune support; decreased platelet aggregation; balancing prostaglandins.

Essentially, GLA helps support the immune system through a variety of mechanisms, and its benefits go far beyond mere immune system function. Many studies on the health effects of GLA have been conducted, and they show stunning results for this beneficial nutrient. In fact, in the 1980s, GLA was studied more intensively than any other nutrient: About 200 clinical trials took place in university hospitals and medical schools throughout the world. One of these researcher, Dr. Horrobin states “that his studies have led him to believe that a lack of essential fatty acids could turn out to be **one of the most common defects in human biochemistry and a significant factor in many diseases**”. Essential fatty acids are especially important in the function of nerve, muscle, and **immune systems**, for when people lack the proper balance, the neurological, endocrine, and immune systems are shown to be adversely affected.

GLA has proven to be effective in the treatment of many serious diseases. Double-blind, placebo-controlled studies for atopic eczema demonstrate that GLA improves skin conditions, relieves itching, and reduces the amount of steroid medication required. In a large, placebo-controlled trial at Bristol University in England, both adults and children showed substantial improvements. In clinical trials for diabetes, **GLA has reversed neurological damage** and lowered plasma cholesterol and triglycerides. GLA has also been shown to be beneficial in the treatment of Sjogren's Syndrome.

- Innocent Casualties: The FDA's War Against Humanity by Elaine Feuer

It is important to point out, however, that many of the studies conducted on GLA used evening primrose oil as their source for this essential fatty acid. GLA from evening primrose oil is an isolated nutrient in a high concentration. Since bio-algae concentrates is a whole food containing a full spectrum of proteins, minerals, vitamins, fatty acids, and other nutrients, its GLA occurring with other EFA and other co-dependant nutrients will be significantly more nutritionally functional and beneficial to overall health.

The richest whole-food sources of GLA are mother's milk, spirulina micro-algae, and the seeds of borage, black currant, and evening primrose. GLA is important for growth and development, and is found most abundantly in mother's milk; spirulina (as contained in BAC) **is the next-highest whole-food source**. We often recommend it for people who were never breast-fed, in order to foster the hormonal and mental development that may never have occurred because of lack of proper nutrition in infancy. (A standard 10 grams dosage of spirulina contains a good daily source of GLA)

— *On Spirulina in Healing With Whole Foods* by Paul Pitchford

Foods high in saturated fats, typical of the American diet, may block the beneficial work of essential fatty acids in the human body, leading to many disease conditions.

Gamma linolenic acid (GLA), an essential fatty acid, is a precursor for the body's prostaglandins, master hormones that control many body functions. The prostaglandin PGE1 is involved in many tasks including regulation of blood pressure, cholesterol synthesis, inflammation and cell proliferation. PGE1 is usually formed from dietary linolenic acid, and the GLA progresses to PGE1.¹ Dietary saturated fats and alcohol and other factors may inhibit this process, resulting in GLA deficiency and suppressed PGE1 formation.²

Numerous studies have shown GLA deficiency may figure in degenerative diseases and other health problems. Clinical studies show dietary intake of GLA can help arthritis,³ heart disease⁴, obesity ⁵, and zinc deficiency. ⁶ Alcoholism, manic-depression, aging symptoms and schizophrenia also have been ascribed partially to GLA deficiency.⁷ A source of dietary GLA may help conditions of heart disease, premenstrual stress, obesity, arthritis and alcoholism.⁸ In Spain, the GLA in spirulina and evening primrose oil is prescribed for treatment of various chronic health problems.⁹

The few known sources of GLA include the plant seed oils of evening primrose plant, black currant and borage seeds, fungal oils, certain algae and human milk.

But you can also get it from BAC every day of your life! A few grams of BAC contains at least 100mg of EFA. This is well documented. 10,11,12. That is about 5% essential fatty acids with 20% of it as GLA.

References

1. Jassby, Alan. Nutritional and Therapeutic Properties of Spirulina. Proteus Corp. 1983.
2. Tudge, C. Why we could all need the evening primrose. New Scientist, Nov. 1981, 506:23.
3. Kunkel, S.L. et al. Suppression of chronic inflammation by evening primrose oil. Progress in Lipids, 1982, Vol. 20, p. 885-888.
4. Kernoff, P.B.A, et al. Antithrombotic potential of DGLA in man. British Med. Journal, 1977, 2:1441-1444.
5. Vadaddi, K.S., Horrobin, D.F. Weight loss produced by evening primrose oil. IRSC Med. Sci., 1979, 7:52.
6. Huang, Y.S. et al. Biological effects of zinc deficiency corrected by GLA. Atherosclerosis, 1982, 41:193-208.

7. Horrobin, D.F. The possible roles of prostaglandin E1 and of essential fatty acids in mania, depression and alcoholism. *Progress in Lipids*, 1981. Vol 20, 539-541. Horrobin, D.F. Loss of delta-6-desaturase activity as a key factor in aging. *Med Hypotheses*, 1981, 7:1211-1220.
8. Passwater, R.A. *Evening Primrose Oil*. Keats Publishing Co. New Canaan, CT, 1981.
9. Lopez-Romero, D. Gamma linolenic acid as a base of treatment for infirmities with evening primrose oil and spirulina. *Med. Holistica*, Madrid, Spain, 12 Oct. 1987.
10. Hudson and Karlis. The lipids of the alga spirulina. *J. Sci Food Agric.*, 1974, 25: 759.
11. Nichols, B., Wood, B. The occurrence and biosynthesis of gamma linolenic acid in spirulina platensis. *Lipids*, 1986, Vol 3, No. 1, 46-50.
12. Roughhan, P. Grattan. Spirulina: Source of dietary gamma-linolenic acid? *J.Sci.Food Agric.*, 1989,47, 85-93.

BAC and Epilepsy

(Research taken from <http://www.themagicisbac.com/page50-00.html>)

In February of 2006 Brenda G. a 32 years old women from southern California shared her experience using BAC as follows:

“I have had no seizures in five months - I have suffered from epileptic seizures since I was a child. When taking medication I would get seizure 3 to 4 times per week. Without medication I could get them daily. With bio-algae concentrates and without medication I have not had one seizure since the first day I started taking bio-algae concentrates six months ago now. Because of my success I recently gave some bio-algae concentrates to my cousin and he has not had seizure in seven weeks.”

Its now been 10 months that Brenda is free of seizures. Brenda is an intelligent women and was frustrated with her condition and hopeless of ever finding a remedy or a cure. A year earlier she and her family had witnessed her dad's successful recovery from pancreatic cancer also using bio-algae concentrates as an alternative nutritional support. Today her dad is free of cancer. This motivated Brenda to try bio-algae concentrates. When she first shared her story, it had only been two months without seizure and yet I was happy for her, but somewhat skeptical. Knowing about our powerful healing potential due to our beliefs and the strong placebo effect of seeing her father doing well, I remained hopeful, but waiting. But after 6 months without seizures I was elated for her and scientifically curious. I too thought epilepsy was hopeless. As a teenager, I had a friend that suffered from frequent seizures that left me sad and confused each time I witnessed them.

Epilepsy and its causes

Epilepsy is a recurrent seizure disorder caused by abnormal electrical discharges from brain cells, often in the cerebral cortex. It is not a distinct disease, it is not associated with any particular disease, it is a group of disorders for which recurrent seizures are the main symptom. Different forms of epilepsy are either secondary to a particular brain abnormality or neurological disorder, or are said to be idiopathic (not clearly known) or related to a particular disease state. Many abnormalities of the nervous system can result in seizure activity. Seizures can also occur in the normal nervous system when its metabolic balance is disturbed.

A nerve cell transmits signals to and from the brain in two ways by (1) altering the concentrations of salts (sodium, potassium, calcium) within the cell and (2) releasing chemicals called neurotransmitters (gamma aminobutyric acid). The change in salt concentration conducts the impulse from one end of the nerve cell to the other. At the end, a neurotransmitter is released, which carries the impulse to the next nerve cell. Neurotransmitters either slow down or stop cell-

to-cell communication (called inhibitory neurotransmitters) or stimulate this process (called excitatory neurotransmitters). Normally, nerve transmission in the brain occurs in an orderly way, allowing a smooth flow of electrical activity. Improper concentration of salts within the cell and overactivity of either type of neurotransmitter can disrupt orderly nerve cell transmission and trigger seizure activity

Certain areas of the brain are more likely than others to be involved in seizure activity. The motor cortex, which is responsible for body movement, and the temporal lobes, including the hippocampus, which is involved in memory, are particularly sensitive to biochemical changes (e.g., decreased oxygen level, metabolic imbalances, infection) that provoke abnormal brain cell activity. About 35% of all cases of epilepsy have no clearly definable cause. The Center for Diseases Control (CDC) reports 2.3 million Americans suffering from epilepsy.

How does BAC help with epilepsy?

When Brenda related her continuing success with BAC, I was happy, but not surprised. In early 2005, returning from an annual visit to Chernobyl, Ukraine, the site of the 1986 nuclear explosion, Dr. Michael Kiriak, PhD and leading authority on bio-algae concentrates had shared with me positive results with children using BAC. The repercussions of this nuclear disaster are still manifesting in thousands of people of the region and many children are affected with seizures and other symptoms of epilepsy. During his visit he had given some bio-algae concentrates to some local clinics and families of friends. When he returned to Canada a few weeks later he received several telephone calls and messages about reduction in the frequency of seizures in several of the children taking the bio-algae concentrates. At the time, we had left it at that.

I knew a lot about the nutritional power of BAC for the brain. BAC contains hundreds of nutrients that are required for brain health and brain healing; the magnificent fatty acids omega 3, omega 6, omega 9, mighty Gama Linoleic Acid (GLA) and many more, the critically beneficial B vitamins, folic acid and mighty vitamin A when occurring as pro-vitamin A from the rich content of beta and alpha carotene in BAC. Some of these nutrients like pro-vitamin A and other antioxidants such as beta carotene are proven to traverse brain barriers and even span across the cell's membrane delivering nutrition, protection and energy. Base on that array of nutrients we know that bio-algae concentrates results in optimum cellular nutrition.

But after this second talk with Brenda, I was curious and wanted specific answers. I asked Dr. Kiriak about the mechanisms of action between BAC and Brenda's amazing results. As usual his answer was simple and holistic. He said:

“Roland, we don't know much about brain diseases. We know there are billions of brain cells and synapses and on/off electrical connections and requirement for nutrients and resulting cellular energy, growth, protection and regeneration. We know there are parts of the brain that regulates rational thoughts, other that regulate basic motor controls. We know that certain areas of the brain are more likely than others to be involved in seizure activity. The motor cortex, which is responsible for body movement, and the temporal lobes, including the hippocampus, which is involved in memory, are particularly sensitive to biochemical changes (e.g., decreased oxygen level, metabolic imbalances, infection) that provoke abnormal brain cell activity.”

In nutrition 101, we know that certain nutrients such as those contained in BAC affect the brain positively. In more advanced and wholistic nutrition we now know that many more nutrients such as certain trace elements and phytonutrients are critical for healthy brain function. We know that BAC contains thousands of nutrients and many more than those currently recommended in the most advanced medical and nutritional sciences.

But more importantly, the greatest "value added" of BAC is its direct influence on the hypothalamus / pituitary relationship. This glandular cortex is responsible for all metabolic activities in our body. When this life critical cortex is properly nourished and energized it holds the power to command the body metabolisms back to balance and health via a myriad of hormones and peptides. For example, one important metabolism is the nutrients to energy conversion (Krebs cycle/ATP) for which the balance in salt/sodium, potassium, magnesium and calcium is critical. This electrical and atomic energy generation occurs unceasingly in each mitochondria of every trillion cells of our body including those at the root of epileptic seizures"

We have since witnessed new success with BAC and epilepsy in children and adults of all ages. BAC is so easy to use; there are no known medical contra-indication...its a food!, its non-toxic and there are no negative side effects.

Why BAC is likely the most efficient food on Earth

(Research taken from <http://www.themagicisbac.com/page2-00.html>)

Many phytochemicals and trace elements found in BAC have been linked with helping in rebuilding of nerve damage in the brain and nervous system? Many nutrients in BAC have been clinically shown to have preventive and curative properties when it comes to all sorts of cancers. BAC also contain a high content of those rare and difficult to obtain from our regular diets essential fatty acids such as Omega 3, 6 and GLA, and other "supposedly" non essential like Omega 9. These nutrients are critical for our healthy brain function and disease prevention? This explains why BAC is often helpful in the prevention and recovery of people with **Alzheimer**, **epilepsy**, **Muscular Dystrophy** and **Parkinson's disease**.

BAC contains high level of astaxanthin, the star of carotenoid

(Research taken from <http://www.themagicisbac.com/page10-01-02.html>)

Astaxanthin has been shown to inhibit lipid peroxidation at the cell level, thus protecting the cell membrane and the mitochondrial membrane within the cell, cross the blood-brain barrier which makes it available to the eye, brain and central nervous system to alleviate oxidative stress that contributes to ocular and neurodegenerative diseases such as glaucoma and Alzheimer's, and to provide significantly more antioxidant capacity than other carotenoids and antioxidants, such as beta-carotene and Vitamin E.

ASTAXANTHIN HAS BEEN SHOWN TO:

- Assist in the support of neurodegenerative conditions such as **AMD**, **Alzheimer's**, **Parkinson's**, **ALS****

** Confirmed in preclinical studies