The Importance of Fulvic Acid

Fulvic acid, a natural extract from ancient plant deposits that were created 75 million years ago in the upper cretaceous period, consist of an immense arsenal and array of naturally occurring phytochemicals, biochemicals, supercharged antioxidants, free-radical scavengers, super oxide dismutases, nutrients, enzymes, hormones, amino acids, natural antibiotics, antivirals, and antifungals. Fulvic Acids greatly enhance the bioavailability of important trace minerals, they regenerate and prolong the residence time of essential nutrients in the cells, modify the damage or toxic compounds such as heavy metals and free radicals, and enhance the permeability of digestive, circulatory, and cell membranes. As the most powerful, natural electrolyte known, fulvic acid restores electrical balance to damaged cells, neutralizes toxins and can eliminate food poisoning within minutes. (Do not confuse "fulvic acid" with "folic acid" which is a common B Vitamin)

The foods we eat, over-processed and void of many essential nutrients, are grown in soils that have been over-planted and saturated with synthetic fertilizers and pesticides. In addition, many mineral supplements are not easily assimilated by the body. Scientists theorize that mineral deficiencies subjects us to more diseases, aging, sickness and the destruction of our physical wellbeing than any other factor in personal health. In fact, according to a U.S. Senate study (Document No. 264), 99 percent of Americans are deficient in minerals and trace elements. To the science of living cells, fulvic acids are vital in bringing substantial amounts of nutrients and minerals into water solution and delivering their living energies to the living cells.

The Fulvic Acid Phenomenon

Nature has a way of processing and refining minerals. The process is called the “Fulvic Acid Phenomenon”. Organic fulvic acids are created by microorganisms in the soil for the purpose of transporting minerals and nutrients from the soil into the plant. From there, complex photosynthesis reactions produce the components of all the various parts of the plant. Mucopolysacharrides (complex carbohydrate sugars) flow throughout the plant for nourishment. Some are returned to the roots. There, the microorganisms are nourished and produce Fulvic Acid to combine with minerals and nutrients to restart the cycle again.

In plants, fulvic acid stimulates metabolism, provides respiration, increases metabolism of proteins and activity of multiple enzymes, enhances the permeability of cell membranes, cell division and elongation, aids chlorophyll synthesis, improves drought tolerance and crop yields, buffers soil pH, contributes to electrochemical balance as a donor or an acceptor, decomposes silica to release essential mineral nutrients, and detoxifies pollutants such as pesticides and herbicides.

Whenever minerals come into contact with fulvic acid, in a water medium, they are naturally dissolved into an ionic form. These minerals literally become part of the fulvic acid itself. Once the minerals meld into the fulvic acid complex, they become bioactive, bioavailable, and organic. Thus, when elemental minerals are transformed into an organic state, through a natural chemical process involving fulvic acid and photosynthesis, they are safe to be used by both humans and animals.

Fulvic Acid: Nature's Detoxifier

Fulvic acid acts as an important protective agent. An important aspect of humic substances is related to their “sorptive” interaction with environmental chemicals, either before or after they reach concentrations that are toxic to living organisms. The toxic herbicide known as Paraquat is rapidly detoxified by humic substances (fulvic acid). Fulvic acids have a special function with respect to the demise of organic compounds applied to soil as pesticides.

As the most powerful, natural electrolyte known, fulvic acid restores electrical balance to damaged cells, neutralizes toxins and can eliminate food poisoning within minutes. When it encounters free radicals with unpaired positive or negative electrons, fulvic acid supplies an equal and opposite charge to neutralize the free radical. Fulvic acid acts as a refiner and transporter of organic materials and cell nutrients. According to A. Szalay, fulvic acid has the ability to dramatically detoxify herbicides, pesticides, and other poisons that it interacts with – this includes many radioactive elements. This detoxification process may extend to animals and humans, since we are the end-users of these plants.
Fulvic Acid and Organic Tissue Growth

In one experiment, patients who required the replacement or transplantation of bone were treated at the University Hospital in Freiburg, Germany using fulvic acid as part of the therapy. Due to the lack of human donor tissues, animal bone, in the form of bovine calcium hydroxyapatite, an inorganic calcium compound, was used. Two problems with such a procedure is that neither animal bones nor inorganic calcium are readily absorbed by the human body. However, these problems were circumvented with the use of fulvic acid. When fulvic acid was inserted into the animal bone before replacement, the patients experienced dramatically improved regeneration of the transplanted bones. The fulvic acid was so readily accepted and used by the patients that their bodies became highly osteoconductive. This means that new bone tissue began to form at an accelerated pace, thereby enhancing growth and healing. The inorganic calcium was also absorbed by the body due to the fact that the fulvic acid had transformed it into an organic compound. At the end of the experiment it was noted that, without the introduction of fulvic acid into the bone tissues, healing was not accelerated and regeneration did not take place.

The majority of research and experimentation that has been done on fulvic acid is in relation to plants. Yet human beings have been ingesting fulvic acid complexes regularly for over 60 years in supplemental form, and for thousands of years from natural food and plant sources. Accumulating testimonials continue to show that the beneficial properties related to plant studies and hold true in relation to animal and humans as well. Clinical research on animals and humans show that the most prominent diseases and health problems of our day have been dramatically effected in positive ways by supplementation or treatment with fulvic acid and other preparations enhanced or created with fulvic acid.

Fulvic acid enhances the availability of nutrients and makes them more readily absorbable. It also allows minerals to regenerate and prolong the residence time of essential nutrients. It prepares minerals to react with cells. It allows minerals to interact with one another, breaking them down into the simplest ionic forms chelated by the fulvic acid electrolyte.

Scientists working with fulvic acid know that it also is an ultramicroscopic substance that has a most unique messaging relay system and that is activated when it comes into contact with living organisms. Research indicates that fulvic acid sensitizes cells, passing on unique information related to immunity. Fulvic acid has also been shown to assist in activating protection and defense mechanisms within the body that remain with the organism for life, even with just one contact.

Liquid minerals are often referred to as ionic or colloidal minerals. Nutritionists know that the absorption factor of ionic minerals greatly exceeds traditional tablet supplements. Fulvic acid plays an important role in the production of ionic or colloidal minerals.

Introducing BIO2’s LTSM® (Lyophyllic Third State) Plant Mineral Complex with Plant Fulvic Acid

Trace minerals are essential for 95% of all the metabolic functions of the human body. Nutritional research now recognizes that plant-derived minerals are far easier and much more absorbable than inorganic minerals found in rocks and soil and which comprise most of the nutritional supplements sold today.

The body can function for some time without vitamins many of which can be obtained from the food we eat or produced by our friendly intestinal flora. But minerals cannot be produced by the body and must come from food sources. Worse yet, most processed foods, stress, anxiety, poor eating habits, smoking, the consumption of coffee, carbonated soft drinks and alcohol, can actually rob the body of its precious mineral supply. Supplementation is the only logical answer.

Fulvic Acid: The Key Transport for Minerals

BIO2’s LTSM®-MMC™ Drink contains over 78 major and trace minerals in a pleasant, ready-to-drink concentrated formula. LTSM®-MMC™ contains naturally occurring fulvic acid. Fulvic acid has the capacity to help plants naturally chelate positively charged elemental mineral ions and store them as negatively charged mineral ions. The result increases a mineral’s bioavailability. In fact, fulvic acid itself can contain as many as 60 different mineral compounds that can be used
by the body! On top of this, fulvic acid is a powerful antioxidant that has the ability to reduce the oxidative effects of free radicals. Research also demonstrates that naturally occurring fulvic acid, like that in LTS®-MMC™, helps increase the beneficial activity of important metabolic enzymes (including transaminase and invertase). Fulvic may also have a positive effect on RNA and DNA.

**LTSM®-MMC™ is the complete natural plant-derived mineral drink.**

**Directions:**
Drink 1/2 ounce (1 tablespoon) every day. May be mixed in 8 ounces of juice or water.

**SUPPLEMENT FACTS:**
Serving Size: .5 fl. Oz. (1 tablespoon)
Servings per container: 32

<table>
<thead>
<tr>
<th>AMT/SERV.</th>
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<tbody>
<tr>
<td>Calcium</td>
<td>8.8 mg</td>
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<tr>
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<tr>
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<tr>
<td>Manganese</td>
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<tr>
<td>Chromium</td>
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<tr>
<td>Molybdenum</td>
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<tr>
<td>LTS®-MMC™ Proprietary Blend</td>
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</tr>
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Includes naturally occurring plant derived fulvic acid, and also the following LTS® minerals and trace elements including: carbon, sulfur, aluminum, phosphorus, tungsten, chloride, potassium, silicon, boron, strontium, calcium, tellurium, vanadium, zirconium, zinc, cobalt, copper, nickel, selenium, indium, ruthenium, platinum, palladium, gold, iodine, rhodium, gallium, yttrium, thorium, barium, rubidium, cerium, germanium, neodymium, scandium, lanthanum, antimony, niobium, samarium, gadolinium, dysprosium, erbium, terbium, promethium, cesium, bismuth, cadmium, europium, holmium, lutetium, praseodymium, silver, tantalum, thallium, thulium, tin, beryllium, hafnium and lithium. Other ingredients include purified water, citric acid and potassium sorbate. 100% pure and natural.

*Daily values based on a 2,000 calorie diet.
**Daily values not established.

**Bibliography:**


33. Environmental Chemicals


40. See "The Fulvic Acid, Vegetal Silica Miracle" later in this report, and further documentation of Kervran, Lois C., Biological Transmutations.


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*This statement has not been evaluated by the F.D.A.

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