

IONIPLEX®

*more than
a fulvic acid*

Fulvic acid is rapidly being recognized as one of the key elements in many health and scientific breakthroughs.

Continue reading for a comprehensive guide to understanding fulvic acid, and our superior formulation, Ioniplex.



Mineral BioSciences, LLC
4050 S. Sarival Avenue
Goodyear, AZ 85338

IONIPILEX®

A FULVIC IONIC MINERAL COMPLEX

a comprehensive guide

Fulvic Acid and Human Health

ful • vic • ac • id

Fulvic acid is a highly soluble organic phenol found in humus, that chelates elemental mineral nutrients.

The use of fulvic acid as a dietary ingredient is not common knowledge, even though its presence is becoming more commonplace and its benefits more well known.

Over the years, numerous scientific studies have been conducted on either fulvic acid, or a combination of fulvic and humic acid (which will be discussed later).

The objective of this guide is to increase awareness and offer scientifically valid support for fulvic acid and its positive role in our health and well-being.

Mineral BioSciences (MBS), is the world's largest producer of fulvic acid, marketed as Ioniplex, a superior, patented fulvic ionic mineral complex¹. Studies cited in this paper that have been conducted using Ioniplex will be referenced as such.

Ioniplex and Bioavailability

Our patented fulvic acid, Ioniplex, is a pure fulvic acid that is highly bioavailable at the cellular level.

A recent study from an independent laboratory showed that Ioniplex® has an ability to penetrate cell membranes and cell walls 15x greater than the control².

Ioniplex and Cellular Function

Cellular Protection

Studies conducted on Ioniplex have shown up to a 50% reduction in glycative damage caused by Advanced Glycation End-Products (AGEs)³. AGEs are destructive molecules that can form when blood sugar levels spike after consuming a meal, especially one high in carbohydrates.

A decrease in the potential for glycative damage also means a decrease in postprandial (after-meal) blood sugar levels in healthy individuals.

Cellular Enhancement

Ioniplex has the capability to detoxify cells by chelating heavy metals (such as arsenic, lead and mercury) within the cells and removing them from the cellular structure².

Ioniplex also has the ability to transport any nutrient or ingredient it is combined with, through cell membranes and cell walls directly into the cell itself².

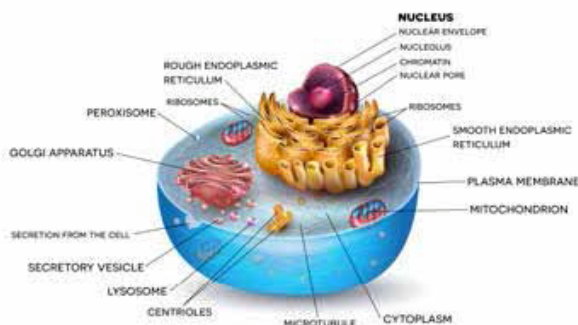
Cellular Energy

Ioniplex has been shown to increase mitochondrial metabolism by up to 50%⁴. The mitochondria are known as the powerhouse, or engine, of a cell as it brings in nutrients and provides energy. There can be numerous mitochondria in each cell, as many as 1,000 in some cases, and they must all function effectively to create energy.

Cellular Absorption

A fundamental and critical characteristic of Ioniplex is its low molecular weight. This facilitates its ability to easily pass through human, animal and plant cellular membranes, allowing it to be quickly absorbed. This characteristic boosts the transport and assimilation of nutrients and/or supplements to key metabolic sites in the target organism.

Fig. 1 | Anatomy of a Cell



Ioniplex and Healthy Skin

Type I collagen is the most abundant collagen of the human body, and is crucial in skin and muscle health. Type I collagen is generated when tissue heals by repair as well as tendons, ligaments, the organic part of bone and skin.

Ioniplex in a study, repeatedly showed type I collagen stimulation. Some results indicated as much as quadruple the presence of collagen production versus a control. The average stimulation observed was a 30% increase⁵.

Ioniplex and Hair & Nails

In a clinical trial, Ioniplex has shown the ability to:

- Improve skin texture by 33%
- Hair appearance by 14%
- Nail growth by 142%
- And a significant increase in nail strength⁶.

Ioniplex and Free Radicals

As a major source of key electrolytes and anti-oxidants, Ioniplex has the unique ability to function as both an electron acceptor or donor, which contributes to electrochemical balance throughout the body.

In the presence of unpaired electrons, it nullifies the damaging effects of these free radicals, thus helping to control inflammation and slow down the aging process.

Being reactive with metals, fulvic acid helps them become more soluble in water, thus aiding in the elimination/detoxifying process.

Ioniplex and Recovery

Too many free radicals can slow down muscle repair, Ioniplex's inherent detoxifying and scavenging nature counters this process and enhances healing time⁷. Combined with its mineral content, Ioniplex enhances recovery and replaces critical electrolytes and depleted minerals far more efficiently than commonly used sports drinks.

Ioniplex and Enzymes

Enzymes are complex proteins that initiate and/or accelerate a reaction within cells. They are vital for life and serve a wide range of important functions in the body, such as aiding indigestion and metabolism.

Ioniplex contains within its structure co-enzymes and important factors, which the cells may utilize in stimulation of enzyme reactions and the formation of enzymes⁸.

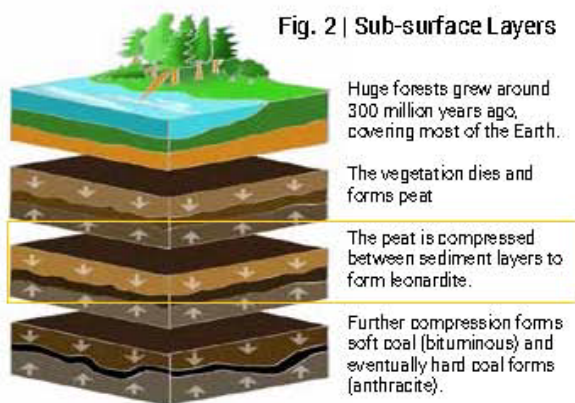
Research has shown that Ioniplex can improve enzymatic reactions in cells and stimulate enzyme development. The burning of glucose in cells for instance, requires the action of several enzymes, hence the ability of Ioniplex to help manage blood sugar.

Fulvic Acid | The basics of organic acids

What is Fulvic Acid? Where is it Found?

Fulvic acid is naturally occurring. Science, to date, has been unable to characterize or synthesize it in a laboratory setting. Its chemical structure, in scientific terms, is best described as a mixture of phenol-carboxylate polyelectrolytes in an acidic medium.

In *layman's* terms, it may be generally described as an organic acid, a liquid extract derived from biologically active layers of ancient, decomposed and compressed plant matter known as leonardite. Reduced to its simplest terms, it may also be characterized as a liquid extract derived from sub-surface veins of biologically active plant-based compost.



Fulvic material has always occurred naturally in plants and soils, but its presence in concentrated layers or veins in the earth is rare and has been commercially available for less than a century. Thus, its extraordinary value to humankind has only recently begun to be recognized.

The Humic Question

Humic acid also an organic acid, and is the material from which fulvic acid is extracted. Some supplement companies make claims regarding the benefits of humic acid. To date, however, there have been no studies conducted showing the benefit of humic acid as a stand-alone ingredient. Some studies have been conducted with a combination of humic and fulvic acids, but none on humic alone. The reason is simple.

The results of the combination studies are due to the action of the fulvic acid within the compound, with no contribution from the humic. Given the difficulty of extracting fulvic acid from humic acid, many companies have a finished product that contains both fulvic and humic acids and thus, attempt to make claims attributed to the humic fraction.

Source and Supply

There are less than a dozen producers of commercially viable fulvic material throughout the world. Depending on the location and nature of their source material (Asia, China, and mostly North America) and the method of extraction employed, their particular fulvic extract may also be known as fulvic acid, ionic minerals, colloidal minerals, humic/fulvic complexes, humic minerals or some variation of the above.

Several extraction processes may be employed to produce an effective end-product, but most producers rely on a two-step process that requires a liquid extraction from the selected

deposit using a high pH medium, which produces a humic acid/fulvic acid mixture.

Step two employs the application of a low pH medium to separate the low molecular weight fulvic acid from its higher molecular weight humic acid partner. The fulvic extract is then treated and sanitized to food-grade standards and sold as a supplement in liquid drink or concentrate (eye dropper) form.

Liquid or Powder

Most companies market their products in liquid form and very few in powder. Mineral BioSciences provides Ioniplex in both liquid and powder forms. The powder is spray dried from the liquid and contains 95% fulvic acid.

External Applications

The vast majority of clinical trials, studies and reports pertain to the internal consumption of fulvic acid. Positive anecdotal reports of the substance when utilized in external applications are received on a regular basis. These applications pertain to fulvic acid when used as a key ingredient in a topical cream or balm.

- Accelerates healing of open wounds
- Minimizes pain and scarring from burns
- Reduces discoloration of skin due to bruises
- Reduces pathogens linked to athlete's foot
- Exhibits anti-microbial/fungicidal properties
- Accelerates healing of cuts, abrasions, rashes and skin irritations
- Accelerates healing and minimizes pain and itching from insect and spider bites
- Counteracts effects on skin of poison ivy/oak

About Mineral BioSciences

Mineral BioSciences (MBS), located in Goodyear Arizona, manufactures pure fulvic acid for human consumption. Mineral BioSciences is a division of Global Organics Group, a company involved in agriculture, animal health and human health. Global Organics has been producing fulvic acid for over 40 years and is the world's largest producer of fulvic acid.

Mineral BioSciences extracts humic material from several mines located in the United States. These mines are identified as sites, which, millions of years ago, were areas of lush vegetation that, over the eons, became veins of leonardite - which is rich in humic acid.

Each site is rigorously tested for quality before the humic material is extracted and transported to the company's state-of-the-art manufacturing facility. Once here it undergoes an extensive, patented extraction process⁷. The end result is a light amber liquid that is pure fulvic acid, Ioniplex.

Ioniplex is a unique fulvic ionic mineral complex containing over 65 minerals and trace minerals. These minerals are dissolved into solution and held in suspension, making the entire complex highly bioavailable and ready to protect, enhance and energize cells - along with all of the other properties previously listed.

Look for Ioniplex in your favorite product, or try IoniCell® capsules or Totála® Cellular Health, a liquid dietary supplement. Both of which contain Ioniplex as an active ingredient.

www.mineralbiosciences.com

www.protectcells.com

References

All internal reports are available upon request.

¹US Patent 9044417 and 8927031

²Bojanowski, K. (2015). Report 697: Bioavailability of Ioniplex. Sunny BioDiscovery. Internal Report.

³Bojanowski, K. (2007). Report MX3: Effect of Ioniplex on Advanced Glycation End-products. Sunny BioDiscovery. Internal Report.

⁴Bojanowski, K. (2006). Report 439: Effects of Ioniplex, No Fear and Full Throttle on Mitochondrial Metabolism. Sunny BioDiscovery. Internal Report.

⁵Bojanowski, K. (2010). Report 400: Effect of Ioniplex on Type 1 Collagen Levels. Sunny BioDiscovery. Internal Report.

⁶Boisits, E. (2009). Report 3411BK0609: A Six Week Study of Ioniplex on Nail Condition. International Research Services. Version 1.5.

⁷Bojanowski, K. (2011). Report 466A: Comparison on the Effect of Commercial Formulations with and without Ioniplex on Metabolic Activity and Protein Synthesis in Human Muscle and Bone Cells. Sunny BioDiscovery. Internal Report.

⁸Castro, Joseph. (2014). How Do Enzymes Work? LiveScience. <https://www.livescience.com/45145-how-do-enzymes-work.html>

Mineral List

Ioniplex has over 65 minerals in its formulation, including:

Carbon (Total Organics), Selenium, Zinc, Magnesium, Calcium, Iron, Sodium, Potassium, Phosphorus, Copper, Silicon, Boron, Manganese, Iodine, Molybdenum, Chromium, Cobalt, Germanium, Gold, Platinum, Chloride, Sulfur, Bromide, Fluoride, Niobium, Iridium, Zirconium, Strontium, Titanium, Palladium, Tungsten, Tin, Vanadium, Rhenium, Nickel, Lithium, Barium, Gallium, Yttrium, Neodymium, Bismuth, Hafnium, Cadmium, Thorium, Antimony, Cerium, Tellurium, Beryllium, Samarium, Dysprosium, Erbium, Indium, Silver, Scandium, Ruthenium, Tantalum,

Rhodium, Rubidium, Thulium, Thallium, Holmium, Ytterbium, Terbium, Lutetium, Gadolinium, Europium, Praseodymium, Lanthanum.

Disclaimer

The information contained in this document (including, but not limited to literature, abstracts, clinical studies, research data, historical uses, advertisements, publications and any other information that is provided in the form of email or attachment) is solely intended for the purposes of education and knowledge and should not be used as medical advice. Mineral BioSciences, LLC does not assume liability for any use of the information presented in this white paper for any reason by any person or entity. Not all of the clinical studies referenced and contained in this document are on MBS products: the other studies are included as background information. MBS is not making any legal representation as to the information provided herein. While efforts have been made to ensure the accuracy of the content and information contained herein, MBS gives no warranty as to the accuracy of the information contained in the content of this document. MBS reserve the right to withdraw or delete information at any time. These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.