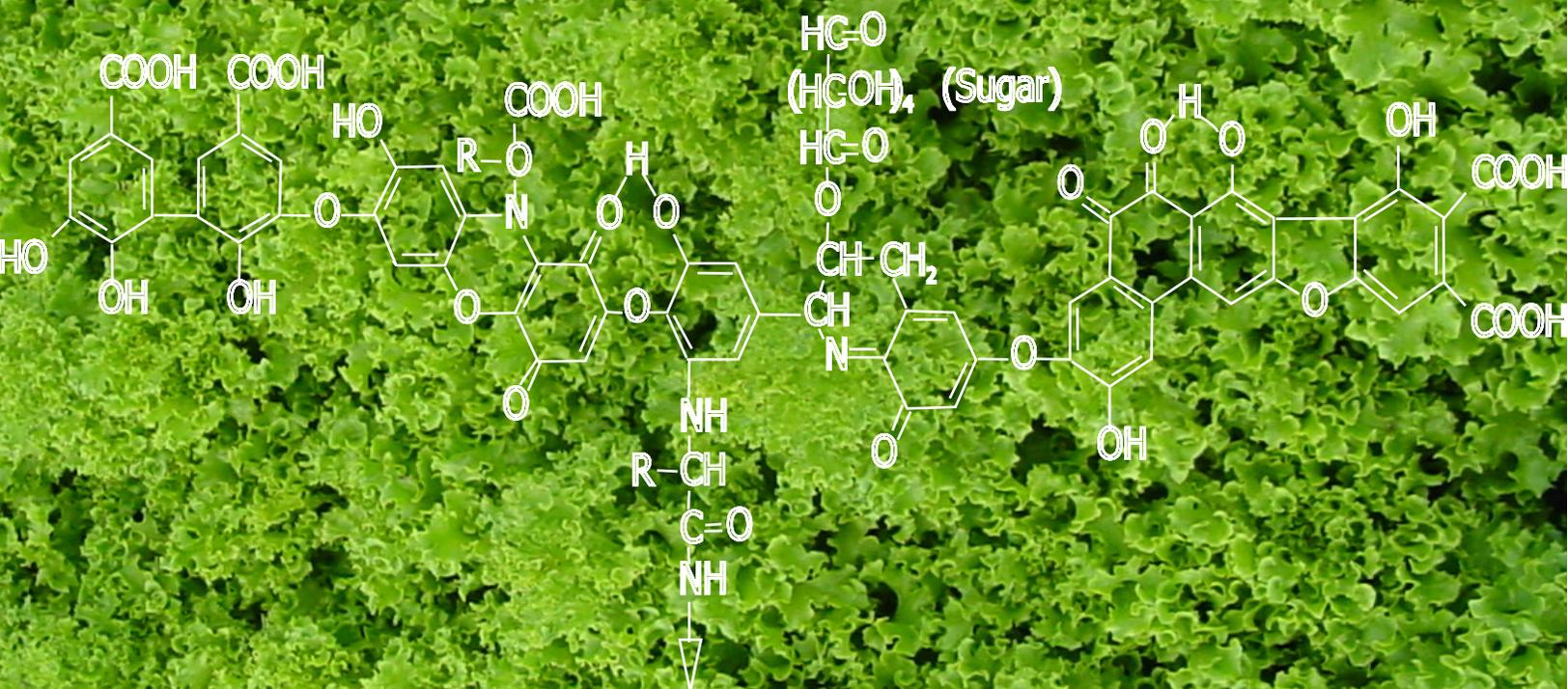


Organic Fundamentals

Technical Series



Fulvic Acid Characteristics



Perfect Blend Organics

Fulvic Acid Major Attributes

Fulvic Acid ¹ is an organic natural electrolyte that can balance and energize biological organisms. It ² is an electrolytic substance that is soluble in water or other appropriate mediums that is capable of conducting electrical current. ³ The power of an electrolyte that has been shown in separate tests on animal cells (giant amoebae); to be able to restore life in what researchers termed “a beautiful demonstration” and “astonishing.” When the electrolyte potential was taken away during the test, the cell ruptured and disintegrated into the surrounding fluids causing death. These studies show convincingly that the physical well being upon reintroducing electrical potential, enabling cells reconstruction to become active and healthy. ⁴

It was also determined from these same studies, that similar results could be expected of the progressive weakness among humans resulting from: unchecked hemorrhages, overwhelming emotional stress, uncontrolled infections, unbalanced diet, prolonged loss of sleep, and surgical shock. These examples are all accompanied by a steady decrease in electrical potential that can eventually be reduced to zero at death. These studies show convincingly that the physical well being of plants, animals, and humans is determined by proper electrical potential. ⁵ Fulvic acid has proven to be a powerful organic electrolyte, serving to balance cell life. If the individual cell is restored to its normal chemical balance thereby turning its electrical potential, we will have given life where death and disintegration would normally occur within plant and animal cell. ⁶ Fulvic acid has the outstanding ability to accomplish this objective in numerous ways. ⁷

Promotes Electrochemical Balance as Donor or Receptor

Fulvic acid is available at times as an electron donor and at other times as an electron acceptor, based on the cells requirement for balance. ⁸ One reaction that occurs is when the chemical species loose electrons as a donor. The other reaction is a reduction in which the active species gains electrons as an acceptor. ⁹ A recent study of the binding donor molecule to fulvic acid in a solution revealed direct evidence for donor-acceptor charge transfer mechanisms.¹⁰ Trace minerals in the fulvic acid electrolyte could also be beneficial in this process by serving as electrode. ¹¹

Most Powerful Natural Free Radical Scavenger & Antioxidant Known ¹²

Free radicals of fulvic acid behave as electron donors or acceptors, depending upon the need for balance in the situation.¹³ Fulvic acid can in some ways take part in oxidation-reduction with transition metals reactions.¹⁴

Complexes Dissolve Minerals & Trace Elements ¹⁵

Fulvic acid is especially active in dissolving minerals and metals when solutions are in water. The metallic minerals simply dissolve into ionic form, and disappear into the fulvic structure becoming bio-chemically reactive and mobile. The fulvic acid actually transforms these minerals and metals into elaborate fulvic acid molecular complexes that have vastly different characteristics from their previous metallic mineral form. Fulvic acid is nature’s way of “chelating” metallic minerals, turning

them into readily absorbable bio-available form. Fulvic acid also has the unique ability to weather and dissolve silica that it comes in contact with.

Enhances Nutrients ¹⁶

Fulvic acid enhances the availability of nutrients and makes them more readily absorbable, allowing minerals to regenerate and prolong time of essential nutrients. It prepares minerals to react with cells and allows minerals to inter-react with one another, breaking them down into the simplest ionic form, chelated by the fulvic acid electrolytes.

Transports Nutrients ¹⁷

Fulvic acid readily complexes with minerals and metals making them available to plant roots and easily absorbable through cell walls. It makes minerals such as iron, that are not usually very mobile, easily transported through plant structures. Fulvic acids dissolve and transpose vitamins, coenzymes, auxins, hormones, and natural antibiotics ¹⁸ that are generally found throughout the soil making them available. These substances are effective in stimulating even more vigorous and healthy growth,¹⁹ producing certain bacteria, fungi, and actinomyces in decomposing vegetation in the soil. It has been determined that all known vitamins can be present in healthy soil. ²⁰ Plants manufacture many of their own vitamins, yet these from the soil further supplement the plant. Upon ingestion animals and humans easily absorb these nutrients, due to the fact that they are in the perfect natural plant form as nature intended. Fulvic acid can often transport many times its weight in dissolved mineral elements. ²¹

Catalyzes Enzyme Reactions ²²

Fulvic acid has close association with enzymes ²³ that increases activity of enzymes and especially influences respiratory catalysts. Fulvic acids increase the activity of several enzymes including alkaline phosphates, transaminase, and invertase.

Increases Assimilation ²⁴

Fulvic acid organic metal complexes are of a low molecular weight, ²⁵ low molecular size, and are capable of a high degree of penetration into cells. Fulvic acid complexes and chelates are able to readily pass through semi-permeable membranes such as cell walls. It is important to note its been determined that fulvic acids not only has the ability to transport nutrients through cell membranes, but also sensitizes cell membranes and various physiological functions as well. ²⁶

Stimulates Metabolism ²⁷

Fulvic acid appears to cause the genetic mechanism of plants to function at a higher level. It has been concluded that when plant cells are exposed to fulvic acid it can improve growth. ²⁸ Oxygen is absorbed more intensely in the presence of fulvic acids. ²⁹ Fulvic acid aids in penetrating plant roots, ³⁰ relieves oxygen deficiency, increases the vital activity of cells, and changes the pattern of the metabolism of carbohydrates, resulting, in an accumulation of soluble sugars.

These soluble sugars increase the pressure of osmosis inside the cell walls and enable plants to withstand wilting, which enhances growth stimulation to the immune system.³¹

Detoxified Pollutants ³²

An important aspect of Fulvic acid is related to their sorptive interaction with environmental chemicals, either before or after they reach concentrations, toxic to living organisms.³³ Fulvic acid rapidly detoxifies the toxic herbicide known as Fulvic Acid ³⁴ rapidly detoxifies Paraquat. It has a special function with respect to the demise of organic compounds applied to soil as pesticides.³⁵ Fulvic acid is vital in helping form new species of metal ions, binding with organic pollutants such as pesticides and herbicides, and catalyzing the breakdown of toxic pollutants. Radioactive substances react rapidly with fulvic acid, and only a brief time is required for equilibrium to be reached.³⁶ All radioactive elements are capable of reacting with fulvic acid and thus forming organo-metal complexes of different absorptive stability and solubility.

Dissolves Silica

Fulvic acids are especially important because of their ability to complex or chelate metal ions and interact with silica.³⁷ It has been shown that these interactions may increase the concentrations of metal ions and silica found in water solutions to levels that are far in excess of their assumed dissolution ability.³⁸

Synthesis ³⁹

Fulvic acid complexes have the ability to bio-react one with another, and also inter-react with cells to synthesize or transmute new mineral compounds. The transmutation of vegetal silica and magnesium to form calcium in animal and human bones is a typical example of new synthesis of mineral's.⁴⁰

Enhances Cell Division and Elongation ⁴¹

Fulvic acid stimulates and balances cells, creating optimum growth and replication conditions.

Enhances the Permeability of Cell Membranes ⁴²

Fulvic acids act as specific cell sensitizing agents and enhance the permeability of the cell membrane.⁴³

Increases Metabolism of Proteins ⁴⁴

Fulvic acid intensifies the metabolism of proteins. ⁴⁵ Definitely increases DNA content in cells ⁴⁶ and increases and enhance the rate of RNA synthesis. ⁴⁷

Catalyzes Vitamins within the Cell ⁴⁸

Fulvic acid has the ability to complex vitamins into its structure, where

they are presented to the cell in combination with complexed minerals. In this perfect natural condition, they can be catalyzed and utilized by the cell. In absence of adequate trace minerals, vitamins are unable to perform their proper function.

Chelates All Monovalent & Divalent Elements to Which It Is Exposed

Fulvic acid has the power to form stable water-soluble complexes with monovalent, divalent, trivalent, and polyvalent metal ions. It can aid the actual movement of metal ions that are normally difficult to mobilize or transport. ⁴⁹ Fulvic acids are excellent natural chelators, cation exchangers, and are vitally important in the nutrition of cells.



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188 106th Ave., NE - Suite 401, Bellevue, WA 98004

Phone: 425.456.8890 Fax: 425.456.8889