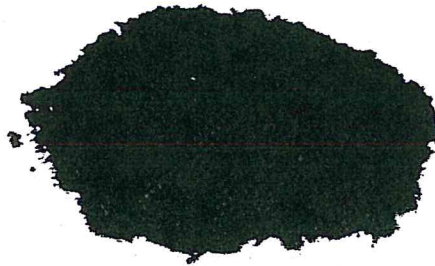


# Health Benefits of Fulvic Acid

## What is Fulvic Acid?



Fulvic acids are a byproduct of micro-organisms found in humus - the organic component of everyday soil - that have a powerful ability to transfer essential nutrients from the earth to the plants that grow in it. Fulvic acids are a yellow metabolite produced by certain fungi. After plants and animals perish, certain types of fungi help their bodies decompose. The raw organic compounds left over from this decomposition then become part of the soil themselves.

Each molecule of fulvic acid contains 14 carbon atoms, 12 hydrogen atoms and 8 oxygen atoms. While linked together, those atoms do not form a long chain. Instead, each molecule of fulvic acid assumes the shape of a ring which causes it to have not only a strong aromatic quality, but also the high energy properties normally associated with healthy soil.

Many manufactured compounds containing fulvic acid have been nano-sized. Once "packed" into tiny particles, fulvic acid can be added to vitamins and supplements. The idea is to increase the rate at which body cells absorb the health-building compounds in these products.

Deep beneath the orange earth of New Mexico, geologists have discovered large regions of a soft, stratified sedimentary rock known as shale. That shale contains some of the highest concentrations of fulvic acid found in North America.

### How does fulvic acid help clean the body of toxic metals?

Ingestion of fulvic acid is known to increase the ability of a given cell to release toxic metals. Fulvic acid can also be used to help keep excess iron out of a human body. It aggregates and bonds to, positively charged harmful metal ions in water within the body and you release them through the urine and feces. This combined with its diuretic qualities increases the body's ability to purge itself of excess toxic metals that it does not need or want.

Fulvic acid is rapidly being recognized as one of the key elements in many outstanding health and scientific breakthroughs of the 21<sup>st</sup> century. More and more scientists and doctors throughout the world are discovering fulvic acid, and are recognizing its extraordinary potential. Interest in the medical community has been escalating rapidly. In the past only very small amounts of fulvic acid had been available for scientific testing. Most of the studies to date have been done on plant cells. In reviewing and evaluating these reports, it is important to bear in mind that leading scientists like Roger J. Williams, recognize and agree with the following fact:

***"the building blocks present in the metabolic machinery of human beings are, in the great majority of cases, exactly the same as the building blocks contained in the metabolic machinery of other organisms of extremely different types."***

**Roger J. Williams**

Although the majority of research and experimentation that has been done on fulvic acid is in relation to plants, it is important to realize that 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. The new discoveries involving fulvic acid are very similar in nature to the recent important discoveries of valuable phytochemicals in vegetables that have always existed, but were hitherto unknown. Fulvic acid has always occurred naturally in organic plants and soils, yet its recent discovery and tremendous value is now just beginning to be recognized.

Accumulating testimonials from regular users continue to substantiate the fact that the same beneficial properties related to plant studies and cells, hold true in relation to animals and humans as well. Clinical studies on animals and humans are beginnings, and updated information will be forthcoming. Preliminary findings 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, extracted, or chelated using fulvic acid.

Uses beneficial to humans are not the only focus here either. The known agricultural benefits have enormous potential to heal soils of the world. Yet the majority of the agricultural community is virtually unaware of the implications. Industrial use for treatment of sewage and landfill waste, neutralization of radioactive and toxic wastes, and a myriad of other uses are just beginnings to be realized. Fulvic acid has already been found to have tremendous potential.

### **Fulvic Acid Major Attributes**

#### **One of Nature's Most Powerful Organic Electrolytes**

As created by nature, organic fulvic acids are created by soil-based micro-organisms ("SBO's") to make minerals and other nutrients assimilable by plants. (The SBO's consume decayed prehistoric plant matter in humate deposits and excrete the substance known as "fulvic acid", or "fulvic acids".) The complex photosynthetic reactions - produced in all plants - produce the nutritional components needed for all the various parts of the plants. Muco-polysaccharides (a class of carbohydrates such as starches and cellulose) flow throughout the plant as nourishment and some of this is returned to the roots where the soil-based micro-organisms are re-nourished to produce additional Fulvic Acid which combines with minerals and other nutrients in the soil to continue the cycle. Fulvic acids are a biologically active mixture of weak aliphatic\* and aromatic organic acids which are soluble in water and all pH conditions (acidic, neutral, and alkaline). The size of fulvic acids are smaller (and of lower molecular weight) than that of humic acids, with molecular weights which range from approximately 1,500 or less". Fulvic acid is an organic natural electrolyte that can balance and energize biological properties it comes into contact with. An electrolyte is a substance that is soluble in water or other appropriate medium that is capable of conducting electrical current.



The power of an electrolyte has been shown in repeated 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 fluid causing death. Upon reintroducing electrical potential the cell reconstructed and became active and healthy.

It was also determined from these same studies, that similar results could be expected of the progressive weakness among humans that results from unchecked hemorrhage, 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.

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 and thereby in turn its electrical potential, we have given life where death and disintegration would normally occur within plant and animal cells. Fulvic acid has the outstanding ability to accomplish this objective in numerous ways.

#### **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 cell's requirements for balance. One of the reactions that occurs is always an oxidation reaction in which the chemical species loses electrons as a donor. The other reaction is a reduction in which the active species gains electrons as an acceptor. A recent study of the binding of a donor molecule to fulvic acid in solution revealed direct evidence for donor-acceptor charge-transfer mechanisms. Trace minerals in the fulvic acid electrolyte could also be beneficial in this process by serving as electrodes.

#### **One Of The Most Powerful Natural Free Radical Scavengers & Antioxidants Known.**

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

#### **Complexes & Dissolves Minerals & Trace Elements**

Fulvic acid is especially active in dissolving minerals and metals when in solution with 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 forms. Fulvic acid also has the unique ability to weather and dissolve silica that it comes into contact with.

#### **Enhances Nutrients**

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



### **Transports Nutrients**

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 also dissolve and transport vitamins, coenzymes, auxins, hormones, and natural antibiotics that are generally found throughout the soil, making them available. These substances are effective in stimulating even more vigorous and healthy growth. These substances are produced by certain bacteria, fungi, and actinomycetes in decomposing vegetation in the soil. It has been determined that all known vitamins can be present in healthy soil. Plants manufacture many of their own vitamins, yet these from the soil further supplement the plant. Upon ingestion these nutrients are easily absorbed by animals and humans, due to the fact that they are in the perfect natural plant form as nature intends. Fulvic acid can often transport many times its weight in dissolved minerals and elements.

### **Catalyzes Enzyme Reactions**

Fulvic acid has close association with enzymes. It 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**

Fulvic acid metal organic complexes are of a low molecular weight, and because of this they are also of 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. Yet it is important to note that it has also been determined that fulvic acids not only have the ability to transport nutrients through cell membranes, they also have the ability to sensitize cell membranes and various physiological the membranes and various physiological functions as well.

### **Stimulates Metabolism**

Fulvic acid appears to cause the genetic mechanism of plants to function at a higher level. It has been concluded that any means by which plant cells are exposed to fulvic acid can improve growth. Oxygen is absorbed more intensely in the presence of fulvic acids. Fulvic acid aids in penetrating roots and then quickly transports to the shoots of plants. Fulvic acid relieves oxygen deficiency and increases the vital activity of cells. Fulvic acids change 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 wall and enable plants to withstand wilting. Fulvic acid enhances growth and may stimulate the immune system.

### **Detoxifies Pollutants**

An important aspect of humic substances is related to their sorptive interaction with environmental chemicals, either before or after they reach concentrations toxic to living organisms. The toxic herbicide known as "Paraquat" is rapidly detoxified by humic substances (fulvic acids). Fulvic acids have a special function with respect to the demise of organic compounds applied to soil as pesticides. It has been established that fulvic acid is vital in helping to 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.** All

radioactive elements are capable of reacting with fulvic acid and thus forming organo-metal complexes of different adsorptive stability and solubility.

#### **Dissolves Silica**

Fulvic acids are especially important because of their ability to complex or chelate metal ions and interact with silica. 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.

#### **Synthesizes Or Transmutates Minerals**

Fulvic acid complexes have the ability to bio-react one with another, and also inter-react with cells to synthesize or transmutate 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 minerals.

#### **Enhances Cell Division and Elongation**

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

#### **Enhances the Permeability of Cell Membranes**

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

#### **Increases Metabolism Of Proteins**

Fulvic acid intensifies the metabolism of proteins, RNA, and DNA. It has been found that fulvic acid definitely increases DNA contents in cells, and also increases and enhances the rate of RNA syntheses.

#### **Catalyzes Vitamins Within The Cell**

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 are able to be catalyzed and utilized by the cell. In absence of adequate trace minerals, vitamins are unable to perform their proper function.

#### **Chelates All Monovalent and 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. Fulvic acids are excellent natural chelators and cation exchangers, and are vitally important in the nutrition of cells.

#### **Fulvic Acid, Origin and Overview**

##### **In the Beginning**

In the beginning the Earth was blessed with optimum organic growing conditions. The soil had a wealth of minerals, trace elements, and rich humus soil teeming with microbes. The Earth's minerals had not yet leached and eroded into the seas, and because of that, the soil was exceptionally fertile. The vegetation was very lush and abundant, as is evidenced by ancient remains that we know were formed into coal and oil deposits.



### **Humic Deposits**

But there have been found other most unusual remains that geologists call humic deposits. They also came from that ancient lush vegetation. These humic deposits never did turn into oil or coal, because they were not exposed to the same tremendous pressures, and were very near the surface where there was abundant microbial activity. These deposits are quite rare and can be found in various areas of the world. Some of these deposits are exceedingly rich in a little known substance called fulvic acid.

### **Fulvic Acid**

Fulvic acid has been discovered to be one of the most important natural miracles related to life itself. It is an acid created in extremely small amounts by the action of millions of beneficial microbes, working on decaying plant matter in a soil environment with adequate oxygen. Fulvic acid is part of the humic structure in rich composting soil. Fulvic acids contain a vast amount of naturally occurring bio-chemicals, supercharged antioxidants, free-radical scavengers, superoxide dismutases ("SOD"), nutrients, enzymes, hormones, amino acids, natural antibiotics, natural antivirals, and natural fungicides. It is of low molecular weight and is biologically very active. Because of its low molecular weight, it has the necessity and ability to readily bond minerals and elements into its molecular structure causing them to dissolve and become mobilized fulvic complexes. Fulvic acid from humic (or humate) deposits usually carries 60 or more minerals and trace elements dissolved into its molecular complexes. These are then in ideal natural form to be absorbed and interact with living cells. Plants roots and cells readily absorb high amounts of fulvic acid, and maintain it in their structure. In fact it has been discovered that these fulvic acid complexes are absolutely essential for plants to be healthy.

### **Microbial Action**

We know that ancient plant life had ample fulvic acid as is evidenced by the exceedingly rich and unusual deposits that are located in various areas of the world. This fulvic acid in these deposits came from massive amounts of vegetation and its further decomposition by microbes. Fulvic acid is then a naturally occurring organic substance that comes entirely from microbial action on decomposing plants, plants themselves, or ancient deposits of plant origin.

### **Fulvic Acid is Lacking in Food Crops**

It seems obvious that most of the agricultural and food crops of today would also contain adequate amounts or at least some fulvic acid and its related mineral complexes, but few do. As human beings it would be reasonable to assume that we should be consuming fulvic acid complexes in the plants we eat, and consequently have fulvic acid in our systems. It is obvious that this is the way nature intended it. But this not the case, nor has it been for a long time. Our soils are sick from poor agricultural practices, pesticides, chemical fertilizers, erosion, and mineral depletion, as well as sterile conditions brought on by these practices, that prohibit microbial activity. Because of this our plants are sick, containing very little nutrition, especially minerals. For generations adequate fulvic acid that should have been contained in the plants we eat has been missing from our diets, yet it is essential for our cell metabolism. Scientists have found that nutritionally we need 90 different nutrients in our diets. Over 60 of these are minerals and trace elements. We are simply not getting them today from the plants we eat. Re-mineralization of soils would be of little benefit without fulvic acid and return to better farming practices. Re-mineralization of our bodies without the fulvic acid that should be contained in the plants we eat, has proven just as useless. People are sick with degenerative and deficiency



related diseases now more than ever. With fulvic acid supplementation and return to proper diet and farming practices these situations have the potential to be reversed.

### **Science & Medicine**

Fulvic acid is still not well known or understood by most of the scientific or medical community. Fulvic acids have not been able to be synthesized by chemists and are unable to be clearly defined because of their extremely complex nature. This perplexity warrants little opportunity for science or medicine to exploit fulvic acid, or profit from new patents. Accumulating claims of encouraging health benefits by the public have been simply remarkable. Many of these health assertions have also shown that they could be disease preventative in nature and dramatically increase longevity. This demonstrates that fulvic acid could potentially pose a substantial long range threat to the future of pharmaceutical companies, medical doctors, and health professionals. It is good news for the public and the alternative health industry. Yet until now, fulvic acid has been entirely overlooked or misunderstood by the majority of alternative health concerns as well.

### **Benefits of Fulvic Acid**

Some scientists have recently been studying fulvic acid, and have come up with some amazing facts. They tell us that fulvic acid is one of the finest natural electrolytes known to man. It helps with human enzyme production, hormone structures, and is necessary for the utilization of vitamins. It has been found to be essential to living cells in carrying on metabolic processes. It maintains the ideal environment for dissolved mineral complexes, elements, and cells to bio-react electrically with one another causing electron transfer, catalytic reactions, and transmutations into new minerals. It is also one of the most powerful natural antioxidants and free radical scavengers known. It has the unique ability to react with both negatively and positively charged unpaired electrons and render free radicals harmless. It can either alter them into new useable compounds or eliminate them as waste. Fulvic acid can similarly scavenge heavy metals and detoxify pollutants. Fulvic acid helps to correct cell imbalances.

### **Hidden Treasures**

Good quality fulvic acid from humic deposits has over 60 different mineral and trace element complexes that naturally occur along with the fulvic acid. These complexes are hidden treasures of the past, in the perfect plant form, just as nature provides. These trace minerals are an additional bonus to the miracle of fulvic acid. These fulvic complexes are hundreds of times smaller than living cells, and are amazingly absorbable by them. It is most important to know that fulvic acid has the unique ability to enhance, potentiate, and increase absorption of many other compounds such as vitamins, herbs, minerals, tinctures, and foods with which it is combined. Fulvic acid is one of nature's miracles of unparalleled proportion!

### **Free Radicals and Antioxidants**

Free radicals are highly reactive molecules or fragments of molecules that contain one or more unpaired electrons. They circulate through the body causing great mischief in bonding to and injuring the tissues. In addition to destroying tissue, they magnify the probability that injured cells will become susceptible to a great many infections and disease, or mutate and cause cancer.

The following public statement was made by the late Dr. Clyde Sandgrin prior to the discovery and naming of active ingredients in humic extract solutions later found to be fulvic acid mineral complexes:

*"If I had to choose between the liquid mineral and electricity, electricity would have to go."*

Reported claims of benefits are little short of astonishing. For internal use they are:

- Increased energy
- Alleviates anemia
- Chelates body toxins
- Reduces high blood pressure
- Potentizes vitamin & mineral supplements
- Magnifies the effect of herbal teas and tinctures
- Chelates all monovalent and divalent metals
- Is a powerful natural electrolyte
- Restores electrochemical balance
- Stimulates body enzyme systems
- Helps rebuild the immune system

Reported claims of external beneficial use:

- Treating open wounds
- Healing burns with minimum pain or scarring
- Eliminating discoloration due to skin bruises
- Killing pathogens responsible for athletes foot
- Acting as a wide spectrum anti-microbial and fungicide
- Treating rashes and skin irritations
- Helping to heal cuts and abrasions
- Helping heal insect bites and spider bites
- Neutralizing poison ivy and poison oak.

**Summary:** In this clinical test and previous experiments, fulvic acid has been shown to activate and stimulate white blood cells, promoting healing, turn inorganic calcium into an organic bio-active cellular regenerative medium conducive to new bone growth, stimulate cellular growth and regeneration, and inhibit the HIV virus.

#### **Intellectual Property**

- Proprietary fulvic and fulvic /humic formulas

#### **Trade Marks**

- EarthWater
- Other "white label" branded products



## Testimonials

My grandson of 3 has suffered from skin disorders that have caused him to have dry, flakey and very itchy skin. Having been introduced to EarthWater with incredible personal results, I decided to give it to him. Within days of taking it on a daily basis, the irritation disappeared and his skin has returned to normal. Great job Earthwater. It's now part of his normal diet.

-GJ - Ex Director Retail Food Chain

My husband introduced me to EARTHWATER and as well as feeling more energy, I've been able to work out more often having a faster recovery rate, I eat less and seem to get more out of my food, but most of all in one month of taking it, I lost 10lbs...and have kept it off. I now enjoy my exercise routine and have more energy than I've ever had... and I'm 60 plus but sure don't feel it.

- MJ McLeod - Retired Event Planner

I discovered that I had cancer all from a visit to the dentists. I was put on a chemo program to kill the cells (both good and bad) in my body. A friend turned me on to EARTHWATER that I took diligently after my debilitating sessions. All I can say is that the doctors were impressed with my recovery time and I am sold on the fact that it helped me through this program with flying colors. I owe my life to Fulvics amazing properties and it will now be a regular part of my life.

- JD - Financial Advisor & Cancer Survivor

I had a shoulder problem for over six months that even inhibited me from putting a belt through my trouser loops. Had been to all the medical specialists who didn't know if it was muscle or joint problems or arthritic. After many pills and injections, I was introduced to Earthwater concentrate through a friend. He gave me a bottle on a Friday. I started taking it and couldn't believe the results. I went back to see him the following Monday morning and showed him how I could rotate my arm with no pain. We were both astonished. I'm sold on the absolute healing power of the Fulvic product.

- HC - MLM Marketing Executive

I started on Earthwater concentrate 9 months ago because I was told it lowers acidity and increases your pH level. I have a high cholesterol count and I was hoping it would do something there also. Twice every year I get flu-like colds that are severe enough to keep me in bed for 3 days and recovering over a 2 week period. One before xmas and one in spring. Since I have been taking BW I have had no colds or flus, I desire less to eat, I have lost approx 5 lbs, have more energy than I can remember and my bad cholesterol has dropped 18% while the good cholesterol has gone up. I believe Earthwater is a miracle product...and it tastes just like water.

- IS - President Creative Thinkers Inc.

A few years ago I was diagnosed with large intestinal problems. It was an extreme problem that caused me to have my large intestine surgically removed. After a time they were able to re-attach everything but my life was hell through constant leakage. I found Earthwater and it changed my life. I am now back to a normal life and tell all that I owe my life to the Earthwater hydration program. I now give it to my cat as well who was having joint problems. She's back to being a kitten again. Unbelievable!!

- L D - President of Luciennes Fine Foods

I was given a bottle of Earthwater concentrate by a friend of mine who told me off all the mystical powers of Fulvic Acid. Sure. I decided to try it and found my energy level increased, I slept much better but unbelievably I lost 9lbs of unwanted weight in a month without changing anything. Unbelievable...but true

- Jessie Flores - SB Cal. Supervisors Office

I was introduced to Earthwater through a business associate who suggested it would keep me healthy and energized. I skeptically started on a daily dose as suggested and found that my psoriasis on my hands had stopped itching and the dryness had gone...in days. I called him and asked if it could do this and his reply was "maybe" I ran out after a month and low and behold, it started coming back. Try and take it away from me now.

- H Malchy - Commercial Realtor

## **Public Opinion and Acceptance**

Globally almost every country is accepting the "bottled water culture." Millions of people get parts or all of their daily water values from bottled water. A study done by Green Nature suggests that over half of Americans drink bottled water, spending 240-10,000 times more than tap water. At the University of Wisconsin-Eau Claire, where I attend college, the "bottled water culture" definitely is in full swing. One cannot glance at a random student or faculty member book bag without finding a bottle of water stowed inside. Drinking bottled water is essentially a part of our culture today. We can look at any local, national or international sporting event and see the prevalence of bottled water. Apparently regular tap water in a bottle or cup has slowly begun to be looked down upon. Although many individuals will carry a reusable water bottle such as a Nalgene, most bottled water containers are thrown away after just one use. This may be due to the convenience of bottled water, as it is almost more readily available than tap water.

The Environmental Health Department at Boston University claims that the bottled water versus tap water debate boils down to a mentality issue. The University states, "We think the problem today is that turning on your tap is an act of faith, and I'm not sure that that act of faith is particularly well-placed." If you drink from the tap, there are several recent studies you should know about because they may change the way you think about your water.

Many older personnel grew up surrounded by very high quality groundwater. With small creeks and a Class A trout stream running through my family's property, this generation always felt safe drinking the surface water. They were also raised on high-quality tap water from underground



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## 2013 Best Skin Tighteners

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An Unbiased Review List of The Top Performing Skin Tighteners In 2013

By Beverly Taylor

Fulvic Acid (not to be confused with folic acid) is rapidly being recognized as one of the key elements in many outstanding health and scientific breakthroughs of the 21st century. Scientists and doctors throughout the world are beginning to discover Fulvic Acid and are starting to recognize its extraordinary potential.

## Fact # 1

Fulvic Acid has always occurred naturally in organic plants and soils, yet its recent discovery and tremendous value is now just beginning to be recognized. It can balance and energize cell life and biological properties it comes into contact with. If the individual cell is restored to its normal chemical balance and electrical potential, we have given cells life where death and disintegration would normally occur.

## Fact # 2

Scientists have found that Fulvic Acid is the element that makes nutrients absorbable, which gives it the ability to make a dramatic impact on all kinds of diseases and health problems that afflict us today. They call it the elixir of life and theorize that without it, nothing would live.

## Fact # 3

Scientists tell us Fulvic Acid is one of the most powerful natural electrolytes known to man. These supercharged molecules balance cellular life restoring the electrical potential that was once normal to the cell by charging, regenerating, regulating and delivering their living energies to the living cells.

## Fact # 4

Fulvic Acid maintains the ideal environment for dissolved mineral complexes, elements, and cells to bio-react electrically with one another causing electron transfer, catalytic reactions, and transmutations into new minerals.

## Fact # 5

Fulvic Acid helps with human enzyme production, hormone structures, and is necessary for the utilization of vitamins. It has been found to be essential to living cells in carrying on metabolic processes.

## Fact # 6

Fulvic Acid has been found one of the most powerful natural antioxidants and free radical scavengers known. It has the unique ability to react with both negatively and positively charged unpaired electrons and render free radicals harmless. It can either alter them into new useable compounds or eliminate them as waste. Fulvic Acid can similarly scavenge heavy metals and detoxify pollutants.

## Fact # 7

If a healthy body is your goal, then you must take action to protect yourself against free-radical attacks.

Dramatic increases of free radicals in our air, food and water in recent years have put a tremendous strain on the body's natural defense mechanisms. Our first line of defense against free radicals is a generous supply of free radical scavengers, called antioxidants.

Free radicals are highly reactive molecules or fragments of molecules that contain one or more unpaired electrons. They circulate through the body causing great mischief in bonding to and injuring tissues. In addition to destroying tissue, they magnify the probability that injured cells will become susceptible to a great many infections and diseases, or mutate and cause cancer.

According to Sesesi, Y. Chen and M. Schnitzer, Fulvic Acid has the ability to dramatically reduce the oxidative effects of free-radicals. This means Fulvic Acid could potentially help your body ward-off disorders such as cancer, premature aging, wrinkling of the skin and

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#### About the Author

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
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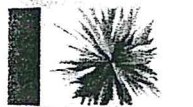
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## Journal Article



## Fulvic Acid Inhibits Aggregation and Promotes Disassembly of Tau Fibrils Associated with Alzheimer's Disease

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## Abstract

Alzheimer's disease is a neurodegenerative disorder involving extracellular plaques (amyloid- $\beta$ ) and intracellular tangles of tau protein. Recently, tangle formation has been identified as a major event involved in the neurodegenerative process, due to the conversion of either soluble peptides or oligomers into insoluble filaments. At present, the current therapeutic strategies are aimed at natural phytocomplexes and polyphenolics compounds able to either inhibit the formation of tau filaments or disaggregate them. However, only a few polyphenolic molecules have emerged to prevent tau aggregation, and natural drugs targeting tau have not been approved yet. Fulvic acid, a humic substance, has several nutraceutical properties with potential activity to protect cognitive impairment. In this work we provide evidence to show that the aggregation process of tau protein, forming paired helical filaments (PHFs) in vitro, is inhibited by fulvic acid affecting the length of fibrils and their morphology. In addition, we investigated whether fulvic acid is capable of disassembling preformed PHFs. We show that the fulvic acid is an active compound against preformed fibrils affecting the whole structure by diminishing length of PHFs and probably acting at the hydrophobic level, as we observed by atomic force techniques. Thus, fulvic acid is likely to provide new insights in the development of potential treatments for Alzheimer's disease using natural products.

## Keywords

Alzheimer's disease, atomic force microscopy, disassembly, fulvic acid, tau aggregation

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