

A GUIDE TO FULVIC ACID

Introduction

Observations, Discoveries and Revelations

Fulvic acid! Fulvic acid? What Is Fulvic acid? Three years ago I had never heard of it. Now I hear it everywhere from people who keep current about the latest and best things for good health. It appears only in the latest dictionary editions, it is that new to the public. But it has been well known to researching biologists as an incredible life initiator and enabler,

When I decided to pen some notes about Fulvic acid, I assembled the information I could find from the available multiple sources, read it, drew fitting deductions, made some salient assumptions from which I could derive some extrapolations and then interviewed informed individuals who are sought-after consultants in “special” bio-physical and physics research projects and who are deeply involved as principal investigators (original research) in bio-physical research for additional ideas or corrections. Thus armed by diligently having done my homework, I found the discussions highly productive and sprinkled with revelatory insights not only about the nature and functions of Fulvic acid but also of their practical applications. They were fascinating and at times compelling.

My plan has been to share what I would learn with other researchers if I were able to discover enough startling insights about this somewhat obscure substance that plays such a surprisingly crucial role in the health of not only our own personal lives but for all living organisms on this planet beyond that of the single celled microorganisms which produce them.

What has yet to be scientifically determined by continuing rigorous investigation is still speculative. But this in turn excitingly suggests the beneficial role Fulvic acid—plus other yet-to-be discovered applications and the mechanisms for their creation—play may extend well beyond that which is currently known.

Very guarded scientific speculation abounds that Fulvic acid’s remarkable attributes, including those yet to be discovered, might be due to a primal level (class) of life-sustaining nano-organelles within symbiotic microorganisms themselves. It has been hypothesized by a growing number of progressive research scientists over a number of decades that these nano-organelles may be responsible for Fulvic acid’s creation and amazing biological role by virtue of a natural mechanism. If proved, it is believed that this may be one of the long sought-after links—a dynamic interface or “holy grail” perhaps similar in magnitude and implications to the discovery of DNA—between biological life as we know it and what both theoretical- and bio-physicists call the Quantum vacuum flux (field). The future of this incredibly versatile all-natural near-miracle worker called Fulvic acid and its potential applications and adaptable extraction methods should prove even more commercially encompassing than at present. Like television, air and automotive transportation and so many other things we take for granted

in our lives were novel or ridiculed science fiction and scientific speculation in the not so distant past. Only time, adequate recourses and diligent investigation will resolve it all.

Though Fulvic acid is normally produced through its extraction from Humic acid, Fulvic acid is created in nature separately to fulfill many very specific and utterly essential functions. The term Fulvic acid is used to describe an entire large class of compounds. There is no single Fulvic acid chemical formula because whatever it may start as, it quickly forms into any of many possible complex molecular combinations which may be needed to suit the varied environments within which they may be needed to function. However, they (the various forms of Fulvic acid) all come under the banner of the Fulvic acid Group. It is this ability to interact very quickly, even with inorganic compounds, that reveals Fulvic Acid's true value to the growth, the spreading and sustenance of plant life on this planet. Fulvic Acid acts in all cases as a "pre-digesting" agent to alter the state of all potential plant nutrients in the soil. This allows them to be easily assimilated by any plant wherever it may be making valiant efforts to survive and prosper.

How does the Fulvic acid suddenly appear at the precise location where its existence is indispensable? Fulvic acid is produced by symbiotic bacteria living on the hair roots of all plants. At this point one is tempted to challenge the very concept of evolution. How could such an adaptively and interactively complex structure as that of Fulvic acid have been able to sustain its important role from the beginnings of biological life on this planet to the present age had it not been intelligently created?

While we would not go so far as to say that Fulvic acid creates life (to organize matter in such a way to establish more complex organized clusters of smaller parts to form functioning, "live" larger self-contained organisms), we do believe that Fulvic Acid is that substance that enables the life force to interact with inert matter in whatever necessary way to impose its specific "will to live" to produce living organisms. This is all based on the information explained in the following pages that has been discovered through observation, research and deduction over a period of years in U.S. laboratories and elsewhere from all around this globe.

Though the influences of Fulvic acid on all forms of life are many and varied, they generally fall into three categories: "what Fulvic acid does for" the host, "how Fulvic acid empowers" the host and "how Fulvic acid protects" the host. The word used here, the host, refers to both plant and animal life which also includes humans. There is no doubt that these categories are arbitrary distinctions determined by the writer because virtually every capability of Fulvic acid has elements of all three of these categories. They were identified to illustrate Fulvic acid's incredible scope of influence at the primal levels. Is there anything else known to match this diversity and extent of performance in its support of living organisms? It has been Fulvic acid's breadth and scope of functions that have delayed its full recognition until relatively recently. It had been previously considered too good to be true until enough revealing scientific evidence was amassed to confirm it. It is an amazingly true story. .

Fulvic Acid's Surprising Qualities & Capabilities

Fulvic Acid Is One Of The Most Important Health Discoveries Ever

The Many Unique Effects Caused By Fulvic Acid On Living Organisms

**The Many Ways Fulvic Acid Can Help To Re-stimulate And Maintain
The Healthy Functioning Of Our Bodies**

1. Fulvic Acid Is One Of Nature's Most Powerful Life Restorers

The Fulvic Acid Group, natural organic electrolytes, can balance, activate and energize the biological properties with whatever organic material it comes into contact. An electrolyte is soluble in water or any other similar medium able to conduct electrical current. The power of an electrolyte has been shown to have the ability to restore life in repeated tests on animal cells (giant amoebae) in what astonished researchers termed "a beautiful demonstration". When the electrolyte potential was removed during the test, the cell ruptured, disintegrated into the surrounding fluid and died. When electrical potential was reintroduced, the cell was reconstructed and returned to healthy activity! It was also determined from these same studies that comparable results could be expected of the progressive weakness experienced by humans that results from unchecked hemorrhage, overwhelming emotional stress, uncontrolled infections, unbalanced diet, prolonged loss of sleep and surgical shock. These examples all show that a steady decrease in electrical potential in the body eventually will reduce to zero at death. These studies prove that the health of plants, animals and humans is determined by proper electrical potential.

The Fulvic Acid Group's individual acids all have similar physical and chemical characteristics. Fulvic acids are derived from humus and can be found in Leonardite ore. However a large deposit of plant acids was discovered from seventy-five million years ago that was isolated from the rest of nature by a lava flow during the upper Cretaceous period. This deposit contains a large number of natural phyto-chemicals, bio-chemicals, supercharged antioxidants, nutrients, free-radical scavengers, super oxide dismutases, enzymes, hormones, amino acids, antibiotics, fungicides and antivirals.

Fulvic acid has proved to be one of nature's most powerful organic electrolytes and it serves to balance cell life. When powerful organic electrolytes are introduced, the individual cell is restored to its normal chemical balance and its electrical potential where otherwise disintegration and death would normally occur within plant and animal cells. Because fulvic acid has the outstanding ability to accomplish this objective in multiple ways, it is required for health in any organic system or body. Nature's way to process and refine minerals, "chelate" metallic minerals and turn them into readily absorbable bio-available forms is called the Fulvic Acid Phenomenon

2. Fulvic Acid Promotes Electro-Chemical Balance Whether Donor Or Receptor

Electro-chemical balance is required for health in any organic system or body. 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 serving as electrodes.

3. Fulvic Acid Dissolves Minerals & Trace Elements

Fulvic acid actively dissolves minerals and metals when they are in solution with water. It dissolves metallic minerals which become bio-chemically reactive and-mobile.

4. Fulvic Acid Forms Complex Molecular Structures

The Fulvic acid actually transforms these minerals and metals into elaborate Fulvic acid complex molecular structures that have vastly different characteristics from their previous metallic mineral form. Fulvic acid also has the unique ability to weather and dissolve silica into an assimilable form when found in the soil with which it comes into contact.

5. Fulvic Acid Enhances Availability

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

6. Fulvic Acid Catalyzes Enzyme Reactions

Fulvic acid also increases enzyme activity and acts as either a donor or an acceptor to supply electro-chemical balance to a cell. It increases the activity of several such enzymes as transaminase, invertase and alkaline phosphates which are essential to an effective assimilation system and a healthy body..

7. Fulvic Acid Increases Assimilation

Fulvic acid metal organic complexes are relatively heavy and, because of this, they have small molecular size and can easily penetrate cells. Fulvic acid complexes and chelates are readily able to pass through semi-permeable membranes such as cell walls. Yet it is important to note that Fulvic acid not only has the ability to transport nutrients through cell walls, it can also sensitize cell membranes and various other physiological functions.

8. Fulvic Acid Stimulates Metabolism

Fulvic acid appears to cause the genetic mechanism of plants to function at a higher level. 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 helps to penetrate roots and then quickly transports to the shoots of plants. Fulvic acid relieves oxygen deficiency and increases the vital activity of cells. Fulvic acids' changing the pattern of the metabolism of carbohydrates results in an accumulation of soluble sugars. These soluble sugars increase the osmotic pressure inside the cell wall and enable plants to withstand wilting. Fulvic acid enhances growth and may stimulate the immune system.

9. Fulvic Acid Detoxifies Pollutants

An important quality of Humic substances is related to their absorptive 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 acid). Fulvic acids function specially on the demise of organic compounds when applied to soil as pesticides. It has been established that Fulvic acid is vital to aid the formation of new species of metal ions which bind with organic pollutants such as pesticides and herbicides to catalyze the breakdown of toxic pollutants. **Fulvic acids restore electrical balance to damaged cells and can eliminate food poisoning within minutes.** Radioactive substances react rapidly with Fulvic acid to reach quickly an equilibrium. All radioactive elements are capable of reacting with Fulvic acid and thus they form organo-metallic complex molecules of differing adsorptive stability/solubility.

Fulvic acids are especially important because of their ability to form complexes of, or chelate, metal ions and interact with silica. They have the ability to bio-react with one another and also to inter-react with cells to synthesize or even transmute new mineral compounds. Fulvic acids act as specific cell sensitizing agents and enhance the cell membrane's permeability. They stimulate and balance cells to create optimum growth and replication conditions.

10. Fulvic Acid Increases Metabolism Of Proteins

Fulvic acid intensifies the metabolism of proteins, RNA and DNA. Fulvic acid definitely increases DNA content in cells and increases and enhances the rate of RNA synthesis.

11. Fulvic Acid Catalyzes Vitamins Within The Cell

Fulvic acid has the ability to introduce vitamins into its structure where they are presented to the cell in combination with complex mineral structures. In this perfectly natural condition they can be catalyzed and utilized by the cell. In the absence of adequate trace minerals all vitamins are unable to perform their proper functions.

12. Fulvic Acid Greatly Enhances Bioavailability Of Important Trace Minerals

Many mineral supplements are not easily assimilated by our bodies. Scientists believe that mineral deficiency subjects us and our animals to more diseases, aging, sickness and destruction of our physical well-being than any other factor in personal health. A U. S. Senate study showed that 99% of Americans are deficient in minerals and trace elements.

13. Fulvic Acid Chelates Monovalent & Divalent Elements To Which It Is Exposed

Fulvic acid has the power to form stable water-soluble complex structures 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.

BROADER PERSPECTIVES

The Fulvic Acid Group

The Fulvic Acid Group is a natural extract, a combination of ancient plant acids, that was created seventy-five million years ago from an ancient plant deposit that became isolated from the rest of nature by a lava flow during the upper Cretaceous period. It contains an immense arsenal and array of naturally occurring phyto-chemicals, bio-chemicals, supercharged antioxidants, free-radical scavengers, super oxide dismutases, nutrients, enzymes, hormones, amino acids, antibiotics, antivirals and fungicides. The Fulvic Acid Group greatly enhances the bioavailability of important trace minerals, they regenerate and prolong the residence time of essential nutrients in the cells, mollify toxic compound damage by heavy metals and free radicals and they enhance the permeability for digestive, circulatory and cell membranes. Because together they are the most powerful, natural electrolyte known, The Fulvic Acid Group restores electrical balance to damaged cells, neutralizes toxins and can eliminate food poisoning within minutes. To the science of living cells, The Fulvic Acid Group is vital to bring substantial amounts of nutrients and minerals into water solution and thus deliver their living energies to our living cells.

Many mineral supplements are not easily assimilated by our bodies. Scientists theorize that mineral deficiency subjects us and our animals to more diseases, aging, sickness and destruction of our physical well-being than any other factor in personal health. In the science of living cells Fulvic acids are vital to bring substantial amounts of nutrients and minerals into water solution more effectively to deliver their living energies to our living cells.

“Ninety-nine percent of Americans are deficient in minerals and trace elements” --
-according to a U.S. Senate study (Document No. 264)

Nature has a way of processing and refining minerals which is called the Fulvic Acid Phenomenon.

Organic Fulvic acids are created by soil micro-organisms to minerals and make other nutrients accessible for assimilation by plants. All plants' complex photosynthetic reactions produce the components for all the various parts of the plant. Muco-polysaccharides (a class of carbohydrates such as starches and cellulose) flow throughout the plant as nourishment. Some of this is returned to the roots. There the soil micro-organisms are nourished to produce additional Fulvic Acid to combine with minerals and nutrients to continue the cycle.

In plants Fulvic acid stimulates metabolism, provides respiration, increases the metabolism of proteins and the activity of multiple enzymes, enhances the permeability of cell membranes, cell division and elongation, aids chlorophyll synthesis, drought tolerance and crop yields, assists denitrification by microbes, 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, bio-available and organic.

Fulvic Acid, Nature's Detoxifier

Fulvic acid acts as an important life-protective agent. An important aspect of Humic substances is related to their absorptive 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 acid). Fulvic acids have a special function with respect to the demise of organic compounds applied to soil as pesticides. **Fulvic acids restore electrical balance to damaged cells, neutralizes toxins and can eliminate food poisoning within minutes.** When it encounters free radicals with unpaired positive or negative charges, it supplies an equal and opposite charge to neutralize the free radicals. Fulvic acid acts as a refiner and transporter of organic materials and cell nutrients.

Fulvic acid has the ability to detoxify herbicides, pesticides and other poisons that include many radioactive elements in dramatic interactions. This detoxification process may extend to animals and humans because we consume these plants.

Fulvic Acid and Organic Tissue Growth

In one experiment patients who required the replacement by transplantation of bone were treated at the University Hospital in Freiburg, Germany, with 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. The problem with such a procedure is that neither animal bones nor inorganic calcium are readily absorbed by the human body. However, this problem was prevented with the help of Fulvic acid. As 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 utilized by the patients' systems that they had also become highly osteo-conductive. This means that new bone tissue could begin to form at an accelerated pace to enhance growth and healing. The inorganic calcium was also absorbed by the body because 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 would not have been accelerated and regeneration would not have taken place.

The majority of research and experimentation that has been done with Fulvic acid has been done on plants. Yet human beings have been ingesting Fulvic acid combinations regularly for over 60 years in supplemental forms and for thousands of years from natural food and plant sources. The accumulation of testimonials

shows that the beneficial properties of Fulvic acid related to plant and cell studies apply also to animals and humans. Clinical research on animals and humans shows that the most prominent diseases and health problems of our day have been dramatically affected in positive ways through the supplementation or treatment with Fulvic acid and other preparations enhanced or created with Fulvic acid.

Scientists theorize that mineral deficiency subjects us to more diseases, aging, sickness and destruction of our physical well-being than any other factor in personal health. A great many known ailments, around 60, are directly linked to mineral deficiency. Organic Fulvic acids are created by micro-organisms on the plant hair roots to allow the transport of minerals and nutrients from the soil into the plant. From there, complex photosynthetic reactions produce the components of all the various parts of the plant. Again, as stated above, muco-polysaccharides (a class of carbohydrates such as starches and cellulose) flow throughout the plant for nourishment. Some are returned to the roots. There, the micro-organisms are nourished and produce Fulvic acid to complex with minerals and nutrients to restart the cycle again.

Fulvic acid increases the availability of nutrients by the process of making them more readily absorbable. It also allows minerals to regenerate and prolong the residence time of essential nutrients. It prepares minerals to be assimilated by cells. It alters minerals to be able to interact with one another through their conversion into the simplest ionic forms brought about and chelated by the Fulvic acid electrolyte.

Fulvic acid sensitizes cells by the passing on of unique information related to immunity. It also has been shown to assist in the activation of the protection and defense mechanisms that are able to be passed on and remain with an organism for its life.

The science of living cells illustrates that Fulvic acids are vital to the bringing of substantial amounts of nutrients and minerals into water solution and the delivering of their living energies to the living cells. Fulvic acid assists every stage of cellular metabolism and is the best natural electrolyte known. It 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, it supplies an equal and opposite charge to neutralize any free radicals.

Fulvic acid acts as a refiner and transporter of organic materials and cell nutrients. 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, bio-available and organic. Thus when elemental minerals are transformed into an organic state through a natural chemical process which uses

Fulvic acid and photosynthesis, they are safe to be used by both humans and animals.

Fulvic Acid, Origin and Overview

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 been depleted from over-farming, therefore the soil was exceptionally fertile.

The vegetation was very lush and abundant as is evidenced by ancient remains that geologists call Humic deposits. These deposits can be found in various areas of the world but are quite rare. Even more rare are deposits of Humic substance which are exceedingly rich in a little known substance called Fulvic acid.

Fulvic Acid – The Supercharged Electrolyte, Fulvic Acid, has been called one of the most important natural miracles related to life itself. This acid was created in extremely small amounts by millions of beneficial microbes on the hair roots of plants.

Because Fulvic acid has such a low molecular weight (the molecules are small), it can readily dissolve and bond minerals and nutritional elements into its own molecular structure. Nutrients that have been chelated by Fulvic acid are in an ideal natural form to interact with and be absorbed by living cells. Fulvic Acid is so powerful that only one single Fulvic acid molecule can carry 60 or more minerals and trace elements into receptive cells.

Fulvic acid is essential for maximum human health but has unfortunately been missing from our diets for generations.

The re-mineralization of our bodies without the Fulvic acid that should be in the plants we eat provides us little benefit. Many people suffer from degenerative and deficiency related diseases now more than ever. Fulvic acid supplementation is recommended to reverse this situation.

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

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

Fulvic acid assists human enzyme production, hormone structures and it is necessary for the utilization of vitamins. It has been found to be essential for living cells to carry on metabolic processes.

Fulvic acid 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 to 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 Acids Further Defined: When individual cells are properly nourished, they can produce many of their own amino acids, enzymes and other factors necessary for all the metabolic processes. In addition to other processes, each cell burns its own energy, maintains itself, manufactures its own enzymes, creates its own proteins and duplicates itself. It is essential to understand that the total metabolism of the body is the sum of the metabolic operations carried on in each individual cell.

Cell Wall Permeability and Absorption: One of the strongest advantages of Fulvic acid minerals is that their absorption greatly exceeds that of the traditional tablet supplements. The only way a body can benefit from any nutrient or supplement is through absorption. Fulvic acid enhances this process through the complexing of them into organic, ionic forms that are easily transported into and through membrane and cell walls. Once the nutrients meld into the fulvic acid complex, they become bioactive and bio-available.

The Fulvic Acid Connection

Humic and Fulvic acids have fascinating effects on living organisms. Fulvic acid chelates and binds scores of minerals into a bio-available form useable by cells. These trace minerals serve as catalysts to vitamins within the cell. Additionally, Fulvic acid is one of the most efficient transporters of vitamins into the cell.

The Enzyme Connection

An enzyme is a catalyst that does not enter into a reaction but speeds up or causes a reaction to take place. Enzymes are complex proteins and the life force behind vitamins and minerals. Without enzyme activation in the stomach food would simply rot, elimination would not take place, thought would cease and we would die.

At the cellular level the burning of glucose in cells requires the action of several enzymes each of which works on the substrate of the previous reaction. When each cell of the body is properly nourished, it can produce the enzymes needed for a complete metabolism. Research has shown that Fulvic acid improves enzymatic reactions in cells and produces maximum stimulation for enzyme development.

Free Radicals & Antioxidants: 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 and cause great mischief by the bonding to and injuring tissues. In addition to tissue destruction, they increase 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 reduce dramatically the oxidative effects of free-radicals. They mean that Fulvic acid could potentially help your body ward off disorders such as cancer, premature aging, wrinkled skin and arthritis ... all of which are thought to be hastened by oxidation.

Fulvic Acid, the Super Antioxidant: We have found that Fulvic acid is a powerful natural electrolyte that can eradicate free-radicals in any form. It can act either as an acceptor or a donor in the creation of an electrochemical balance. If it encounters free radicals with unpaired positive ions, it supplies an equal and opposite negative electron charge to neutralize the bad effects of the free radicals. Yet when the free radicals carry a negative electron charge, the Fulvic acid molecule can supply the necessary positive unpaired ions to nullify that charge. Fulvic acid plays the role as a bi-directional super antioxidant.

In Summary: Fulvic acid is a bio-available chelated molecule that can also chelate. As a refiner and transporter of organic minerals and other cell nutrients, it has the ability to turn “bad guys” into “good guys” by the chelating and neutralizing of free radicals. Depending upon the chemical makeup of the free radicals, they can be incorporated into and become a part of life-sustaining bio-available nutrients. If the chemical makeup of the free radical is of no particular benefit to the metabolism, it is chelated, mobilized and carried out of the body as a waste product

Many of the substances that make up Humic matter have yet to be discovered and catalogued among the known and documented organic chemicals. We are beginning to realize that what we know about Fulvic Acid is just the tip of the iceberg.

A famous quote by Wm. Withering

Consumption of plant-derived mineral Fulvic complexes by humans for many years has shown that they will not accumulate in the body tissues as do metallic minerals. The following observations and theories describe the reasons why: Cells have the ability to accept or reject minerals, including aluminum, lead, arsenic, mercury, etc. at their discretion when presented within organic Fulvic acid complexes. It should be considered that these minerals may not necessarily be present to “nourish” cells, but are needed to act as “electrodes” in the Fulvic electrolyte solution. In that capacity they are probably most essential for bio-reactions, electron transfers, catalytic reactions and transmutations.

Fulvic acid carries complexed minerals in “trace” amounts only and should not be confused with metallic minerals. Fulvic acid has the ability to complex with and remove toxic metals and other minerals from the system. Fulvic acid mineral solutions have been

ingested by people for many years, yet have never been shown to cause toxic mineral build-up in humans.

It is obvious that when metals, minerals and trace elements become complexed into and become a part of Fulvic acid, they take on an entirely new property of availability, unlike their original form.

It is when Fulvic acid is not present that one should seriously worry about toxic buildup from any source. This could account for the health problems that are causing concern today in our “Fulvic starved” society.

CONCLUSIONS

In the late 1700's geologically young and agriculturally healthy top soils contained broken down plant and microorganism biopolymer acid (including DNA building blocks) constituents (namely Humic acid, Fulvic acid and Humins that are found in association with each other). These were discovered by pre-sterilized isolation of the non-bacterial acid compounds in colloidal suspension derived from the *humus* portion of top soils. Thus the name “*Humic*” acid was born. Analysis revealed that proportionally small amounts of Fulvic acid and non-bacterial nano-organisms remained after fine filtration. Both groups of raw isolated acids exhibited high biological support activity. Thus more cost effectively produced chemically processed isolates (used primarily in laboratory research/analysis and pharmaceuticals) generally exhibit comparatively poorer effects and less desirably divergent biological activity than do high purity and performance, low temperature, mechanical-aqueous extraction methods (these are used for nutritional and agricultural applications). This is due to the high *combining* activity of Fulvic acids. Humic and Fulvic acids are currently isolated in much higher concentrations from ancient coal and marine shale deposits with greater diversity of bio-active constituents. From them three grades can be produced: Food grades made for human consumption, Laboratory and pharmaceutical grades for research and other specific uses and Technical grades for agricultural applications. In certain circumstances, for biological applications, post production Fulvic acids may be very beneficially recombined with Humic acids derived from the same mineral deposits for their synergistically desirable attributes.

Not all Fulvic acids found on the market are the same in terms of potential application, quality or benefits for two fundamental reasons: intrinsic differences in raw mineral quality (toxicity levels) and beneficial character between geological sources from which Humic and Fulvic acids are derived. The other is the manner and quality of the extraction process used. These are partly due to the fact that there are probably as many

and varied-in-character Fulvic Acid Group combinations as there are ancient Humic-rich mineral deposits from which they are commercially extracted. Also, variances in milling, extraction methods (i.e., chemical refining or *more preferred* natural aqueous procedures) and purification processes directly impact *beneficial* qualities, biological activity and purity of both Humic and Fulvic acids.

Teravite's Fulvic mineral complex is a 100% completely natural water extraction from a seventy-million year old earthly deposit which contains over seventy-two essential dissolved ionic minerals and trace elements. It contains over 22% Fulvic acid solids.

Clearly, for the optimum functioning of our bodies throughout our extended lives depends primarily on two practices beyond, of course, intake of proper foods and water. These two practices are the maintaining of a pH level of 7.0 or higher and the ingestion on a daily basis a certain amount of Fulvic Acid Complex. The exact amount of Fulvic Acid Complex depends entirely which Fulvic Acid Complex you use.

A high pH level is absolutely necessary to weaken and defeat the anaerobic diseases. The presence of Fulvic Acid Complex, by its profusion of incredible abilities, may also have the ability to extend the lives of cells in a way similar to that of a telomerase. A telomerase theoretically has the ability to extend the telomeric chain on cells so that cells will be able to continue to divide for a significantly longer time. That ability allows those cells always to maintain the appearance of youth.

Note: Fulvic minerals are not just for humans. Fulvic minerals are doing wonders for pets' health! In addition to food supplementation with Teravite's Omica Plus and Active Ionic, Teravite's whey minerals with inulin and probiotics can supplement the diet of any animal.

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