ESSENTIAL ELEMENTS™ FULVIC MINERAL MATRIX

Perfectly balanced by nature in a super enriched pristine environment, suspended in time and undisturbed for over 30 Million Years.

NATURES PREREQUISITE FOR HEALTH OF ALL LIVING THINGS
The building blocks of life for the soil, plants, animals and humans.

To better understand why ESSENTIAL ELEMENTS™ Is unsurpassed as a mineral and element supplement, it is essential to know something about the way these deposits were first formed, why our humic shale deposit is so rare and unique, how the trace minerals and elements are extracted, the difference between colloids, ions, and the electrical potential of living cells. It has been estimated that our shale is most likely Lower Oligocene (28 to 34 million years old) known within the VG group as the Red Bluff, Forest Hills and Mint Spring Formations. Three formations represent a sequence of advances and retreats of the sea that created new shorelines. It is along one of these ancient shorelines that rare deposits of humic shale, abundantly rich in minerals, trace elements and fulvic acids occur. The trace mineral concentrations are higher in land/sea deposits and the ratios of one element to another are more balanced. This is one of the primary reasons why ESSENTIAL ELEMENTS™ Is so unique.

ESSENTIAL ELEMENTS™ Trace Minerals are rich in colloidal plant derived iron not the type of iron found in flesh foods or ground water. In fact children and women suffer frequently from iron deficiency. Studies indicate that children who are iron deficient in their early years may develop learning disabilities later on. Diets high in sucrose, fats, junk food and chemicals require an increase in colloidal plant derived iron and all other trace elements. Plants contain iron and calcium as the predominate elements not sulfur or chloride! If a plant contains true "plant derived colloids" then colloidal iron must be present in generous quantities for it to fully meet that criteria. As you can see ESSENTIAL ELEMENTS™ Is extracted from a very rare form of humic shale. It is the presence of these land and sea plant minerals and their ratios to one another that make ESSENTIAL ELEMENTS™ superior in content and quality! ESSENTIAL ELEMENTS™ Is closer in mineral composition and ratios to human body fluids than any other naturally occurring trace minerals product.

ESSENTIAL ELEMENTS™ Is processed by using only fresh water as a leaching agent, producing over 74 trace minerals and element concentrations in excess of 250,000 mg/1 or 25% total dissolved solids. These concentrations are only possible due to the rare and unique nature of our humic shale. The smaller the colloidal particles in humic shale the greater the concentration of trace minerals and elements in the final product. The smaller the colloids the greater the electrical potential and surface area available for the interaction with water. Also known as a hydrophilic mineral. By leaching humic shale with low temperature water it becomes possible to reactivate fulvic acid fractions and disperse the ionic and colloidal minerals in the resulting liquid. It is the fulvic acid that helps maintain the electrical charge so vital to the health of living cells.

“In the future, we will not be able to rely anymore on our premise that the consumption of a varied diet will provide all the essential trace elements, because such diet will be very difficult to obtain for millions of people.”
**Dr. Walter Mertz, U.S. Department of Agriculture, as told to Congress in 1977

“The quality of all living things (health, vigor, intelligence, longevity, etc.) depends on the protoplasm of life in the soil, and that depends on the availability of elements in the soil stone.”
**Survival of Civilization by Hamaker and Weaver

The body needs 90 different nutrients in the diet on a daily basis for optimum health. These nutrients include 60 minerals, 16 vitamins, 12 amino acids and 3 essential fatty acids. We absolutely can no longer get these nutrients from our diets alone. Researchers have proven that the root cause of most diseases 'in humans and animals stem from nutritional deficiencies. It is well-known fact that for decades farmers and veterinarians have treated animals successfully with nutrients to prevent and cure every kind of disease. Treating the human animal nutritionally is just as effective. In order to insure our health, we must provide ourselves with the basic building blocks of life on a daily basis.
**Tonita d'Raye, The Ten Minute Read Company, 1988

Chemical fertilizers destroy the tiny microorganisms in the soil that are necessary to convert inorganic minerals into usable form for the plants to absorb. Not only is the soil already lacking naturally occurring minerals, but it is difficult for the plants to assimilate what minerals are left. Plants will grow in soils that are low in minerals and trace elements such as magnesium, manganese, iron, iodine, chromium, and selenium. However, these trace minerals and elements are vital to humans; therefore the lack of them in the diet can result in severe deficiency diseases.

"Sick soil means sick animals and sick people." US Senate document #264.

A summary of the United States document #264 of the 74th Congress, 2nd Session, states the laboratory tests prove that U.S. farm and range soils are depleted of minerals and grains, fruits, vegetables, nuts, and even milk are not what they were a few generations ago The document states that people who cat these foods develop mineral deficiency diseases that can be corrected only by including mineral supplements 'in their diets. It also states that 99% of the population was deficient in minerals at the time of the report. This senate document was published by the U.S. Congress in 1936, almost 65 years ago! Demineralization of the soil and mineral deficiency in humans and animals have escalated to such a degree that they may have catastrophic effects on our ability to survive as a healthy and vibrant civilization.

"The quality of all living things (health, vigor, intelligence, longevity, etc.) depends on the protoplasm of life in the soil, and that depends on the availability of elements in the soil stone." Survival of Civilization by Hamaker and Weaver

WHAT ARE FULVIC ACIDS, AND THEIR FUNCTIONS?

FULVIC ACID is the acid radical found in humic matter which is soluble in alkali, acid, methyl ethyl ketone, and methyl acid. Fulvic acids provide multiple and natural chemical reactions in the soil, thereby instigating and stimulating unique and positive influences on plants metabolic processes. Below is a summary list of the unique functions of fulvic acid

+ Assistance in seed germination and growth.
+ Improved development of roots and shoots.
+ Resistance of plants to fungal attack.
+ Metal complexing and nutritional physiology.
+ Enhanced uptake of nutrients.
+ Stimulation of plant metabolism.
+ Chelation and effects on the plant growth cycle.
+ Positive effect on plant RNA and DNA.
+ Catalysts in plant respiration.
+ Increased metabolism of proteins.
+ Increased activity of multiple enzymes.
+ Enhanced permeability of cell membranes.
+ Enhanced cell division and cell elongation.
+ Aid to chlorophyll synthesis.
+ Increased drought tolerance.
+ Increased growth and yield of crops.
+ Assist denitrification by microbes.
+ PH buffering capacity.
+ Special chemical affinity for balance.
+ Participation in syntheses of new minerals.
+ Chemical weathering or inorganic substances.
+ Silicate decomposition by hydrogen ions of Fulvic acids.
+ Aid in the creation of fertile new soil.
+ Ability to scavenge heavy metals.
+ Detoxification of various pollutants.

Reference: William R. Jackson, Ph.D. Organic Soil Conditioning

Fulvic Acid Minerals Information

Fulvic acids defined

Fulvic acids: What are they? Where do they come from? What can they do? Why do we need them? Though virtually unknown to the layman, there is perhaps no substance more vital to life, (with the possible exception of oxygen and water) than the biologically derived compounds known as Humic and Fulvic acids. Fulvic acids enter into all life processes within plants and animals and wear many hats. When necessary; they act as free-radical scavengers, supply vital electrolytes, enhance and transport nutrients, make water wetter, catalyze enzyme reactions, increase assimilation, stimulate metabolism, chelate essential major and trace elements making them organic, and demonstrate amazing capacity for electrochemical balance.

Unknown Fulvic

Despite the fact that scientists world wide have published thousands of papers relative to fulvic acids and their effect on living matter, they have received limited public exposure because of the inability to produce and commercialize these substances. Researchers consider water extracts of 30 parts per million (ppm) as being a high concentration. For obvious reasons the knowledge of fulvic acids have been confined primarily to the scientific community.

How Are They Formed?

Fulvic acid is a derivative of microbial degradation of humic substances. Microorganisms are essential to the process. Each gram of healthy top soil has in excess of four billion microorganisms that participate in manufacturing bio-chemicals essential to healthy plants and animals. If they were to fail our lives would cease. A better perspective of their importance can be gained by looking at the work they do. Microorganism activity in preparing one acre of top soil, expends the equivalent energy of 10,000 people doing the same amount of work in the same amount of time.

What Humic Substances Do in the Soil

Scientists claim organic substances stimulate plant cellular growth and division, including auxin type reactions. They enhance plant circulatory systems and promote optimum plant respiration and transportation systems. They decrease plant stress and premature deterioration. They dramatically improve seed germination and promote greater fibrous root growth. They increase the size and numbers of legume root nodules and increase resistance to drought and insect infestation. High molecular weight humic substances serve as food stock for microorganisms which in turn break them down into smaller units of high energy substances called fulvic acid. Humic substances of high molecular weight, including humic acids, alter the physical characteristics of the soil while low molecular weight fulvic acids are involved in biochemical reactions that influence the plant's metabolic process. Both are indispensable.

The Fulvic Miracle

In addition to duplicating many of the positive functions of humic acid, fulvic acid will:

- Stimulate metabolism
- Give positive effect on RNA & DNA

- Act as a catalyst in respiration
- Increase metabolism of proteins
- Increase activity of multiple enzymes
- Enhances the permeability of cell membranes
- Enhance cell division and cell elongation
- Aid chlorophyll synthesis
- Increase drought tolerance, and prevent wilting
- Increase crop yields
- Assist denitrification by microbes
- Buffer soil pH
- Contribute electrochemical balance as a donor or an acceptor
- Synthesize new minerals
- Chemically weather inorganic substances
- Decompose silica to release essential mineral nutrients
- Detoxify various pollutants (pesticides, herbicides, etc.)

The two major life functions which cannot be duplicated by man are Photosynthesis and Humification

Who and What are you?
Biologically you consist of varying amounts of the following major and minor elements;
Calcium
Carbon
Chlorine
Hydrogen
Iron
Iodine
Magnesium
Sulfur
Oxygen
Phosphorus
Potassium
Plus traces of aluminum, bromine, cobalt, copper, fluorine, manganese, nickel, silicon, sodium, zinc, and all the additional (as yet) undiscovered trace elements being added to the list as our knowledge increases.

The Body Cellular
The elements you are composed of (plus or minus a few billion) are components of approximately 60 trillion cells. An average cell contains about 1 quadrillion molecules, which is about 10,000 times as many molecules as the milky way has stars. Individual cells when properly nourished, are capable of producing many of their own amino acids, enzymes, and other factors necessary for all metabolic processes. Each cell, in addition to other processes, 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.

Growth & Maintenance Nutrients

Scientist have identified at least 90 growth and maintenance nutrients which must be continuously supplied to the body to sustain healthful life. These growth and maintenance nutrients include amino acids, major and trace minerals, vitamins and other nutritional factors. When these factors are supplied to our cells, the cells then create the building blocks for the total metabolic machinery of our life process. The building blocks present in the metabolic machinery of human beings are (in the great majority of cases) the same as the building blocks contained in the metabolic machinery of other organisms of extremely different types. Organisms vary in their capacity to produce some of these building blocks internally. Some organisms are capable of producing all amino acids within their cells. Humans can produce all but eight. Some organisms can produce many of the vitamins within their cells. We can only produce one. The very complex processes of all metabolic functions are carried on within the cell. If we fail to supply the cell with the essential growth and maintenance nutrients we will experience a breakdown of these functions. When this breakdown is substantial we have the onset of disease or the manifestation of some related defect.

Nutritional Deficiencies

Total deficiencies in one or more of the growth and maintenance nutrients which human cells need for healthful metabolism is now a rare occurrence, but substantial deficiencies in the growth and maintenance nutrients is a common.

Sick Soils, Sick Plants, Sick People

All naturally fertile soils contain adequate amounts of humic and fulvic acids produced by resident microbes within the soil. Humic and fulvic acids assist the plant in obtaining its complete nutrition. Our modern agriculture aims (with few exceptions) at one goal which is market. Food quality is sacrificed for food quantity. Since the farmer is paid by the bushel, yield is paramount to nutritional content. The farmer in his frantic effort for yield, has succumbed to the Pied Pipers of agro-chemical companies with products to sell. He is further decoyed by bad advice from county agents and higher schools of learning that protect the "grant" status of moneys received from these same agro-chemical companies, who advocate the application of excessive amount of nitrate fertilizers to the soil. Such practices stun and destroy the indigenous microbial life within the soil. When microbial life is inhibited or destroyed, vital humic and fulvic acids are exhausted.

Gone Are The Minerals

When microbes are depleted from the soils, they are no longer present to convert inorganic minerals into organic minerals needed by plants. Excessive use of nitrate fertilizers inhibits the formation of normal plant proteins and stimulates an over-abundance of unused amino acids that attracts insects. Since pests were created to eat diseased plants this introduces the ideal environment for increased infestation because of increased insect food supply. The farmers reaction is more pesticides and fungicides to save his infested crop. This in turn inhibits or destroys even more vital microorganisms that are essential to mineral conversions to plant nutrients.

Unsafe Foods

These deficient, pesticide laden products are turned into "cash" which the farmer thinks is the bottom line. Lacking in organic trace elements and other nutritional factors, but long on chemical residues from pesticides, insecticides, herbicides, these nutritionally hollow products end up on the tables of America. Without

taste, and deficient in organic minerals and nutrients, we peel, boil and overcook what remains and ask "why do I hurt?"

Can Good Foods Be found?

A very small percentage of the agricultural lands of America are fertile enough to produce nutritious and healthy foods. An honest effort in attempting to select a healthful diet from grocery shelves may be a nutritional disaster. Unless you are fortunate enough to organically grow your own foods, supplementation is a necessity.

The Vitamin Connection

In this century common vitamin deficiency diseases have been reduced dramatically due to our awareness of the role of vitamins in nutrition. New breakthroughs are just beginning to emerge in the use of increased dosages for treatment of some ailments. It should be noted however that vitamins cannot complete their function in the cell's metabolism without the presence of certain minerals. This may explain the fascinating effects of humic and fulvic acids a twork in living organisms. Fulvic acid chelates and binds scores of minerals into a bio-available form use by cells as needed. These trace minerals serve as catalysts to vitamins within the cell. Additionally, fulvic acid is on to 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. The burning of glucose in cells for instance, requires the action of several enzymes, each working on the substrate of the previous reaction. Each cell of the body (when properly nourished) is capable of producing the enzymes needed for complete metabolism. Research has shown that fulvic acid improves enzymatic reactions in cells and produces maximum stimulation of enzyme development. The fulvic acid molecule often contains within its structure coenzymes and important factors which the cells may utilize in stimulation the manufacturing of enzyme reactions and formation. Leading scientists, such as Roger J. Williams, recognize that: "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 organism of extremely different types." Fulvic acid will in all probability, be found to be one of the key factors of enzyme reactions with all living cells.

Free Radicals & 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 diseases, or mutate and cause cancer.

Free Radical Scavengers

Our first line of defense against free radicals is a generous supply of free radical scavengers called antioxidants. 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. When we exceed our capacity to resist, cell membranes and tissues are exposed to the devastating onslaught of free radicals which combine with the lipid portion of cell membranes to greatly lower their resistance to carcinogenic pathogens.

Super Antioxidants

In recent years frantic efforts have been make to locate and isolate compounds with extraordinary affinity for free radicals. Entire industries have evolved around such efforts, with nearly every vendor of health food products offering suitable solutions. Because of the limited public knowledge concerning the great contribution fulvic acid plays as a bi-directional super antioxidant, we need to consider certain facts.

Fulvic Acid and the Free Radical Connection

To gain knowledge of how antioxidants tie up free radicals we must understand their workings, and explode a general misconception. For antioxidant to bind a free radical the antioxidant molecule must have unpaired electrons of equal and opposite charge to that of the unpaired electrons of the free radical. In a sense the free radical scavenger is its self a free radical or it could not mate and neutralize the destructive effects of free radicals.

Who Wears the White Hat?

We have found that fulvic acid is a powerful, natural electrolyte that can act as an acceptor or as a donor in the creation of electrochemical balance. If it encounters free radicals with unpaired positive electrons it supplies an equal and opposite negative charge to neutralize the bad effects of the free radicals. Likewise, if the free radicals carry a negative charge, the fulvic acid molecule can supply positive unpaired electrons to nullify that charge.

Antioxidants and Beyond

Being a bio-available Chelated molecule that can "also" chelate, fulvic acid wears the white hat. As a refiner and transporter of organic minerals and other cell nutrients, it has the ability to turn bad guys into good guys by chelating and humanizing free radicals. Depending upon the chemical makeup of the free radical, they can be incorporated into and become a part of life sustaining bio-available nutrients. They may become an asset instead of a liability. In the event that the chemical makeup of the free radical is of no particular benefit, it is Chelated, mobilized, and carried out of the body as a waste product.

The Human Experience

Although being made prior to the discovery and naming of fulvic acid, the late Dr. Clyde Sandgrin publicly stated: "If I had to chose between the liquid mineral and electricity, electricity would have to go." Reported 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 external beneficial use in:

- 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
- Aids in neutralizing poison ivy and poison oak

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