

MINERAL MAGIC

The SPECTRA 12™ formula has over 70 free form minerals present and bio-available. These micro-wonders:

1. Contribute to noticeable results very quickly
2. Are derived in a natural and pure state
3. Are in a form the body understands, and therefore are capable of conducting the body's own electrical energy
4. Significantly increase the effectiveness of the other nutrients present in SPECTRA 12™

Benefits to Spectra 12™

1. **Competitive edge:** In a marketplace that is more competitive than ever, the ability to market a rich and full-spectrum of minerals in a naturally occurring state sets us apart from our competition. More and more research supports a need for mineral and trace mineral supplementation.
2. **Mineral and trace mineral will boost the effectiveness of you product:** "Mineral and trace mineral act as catalysts for other nutrients, vitamins, hormones, and neurological functions."
3. **Awareness:** The presence of so many free-form minerals in SPECTRA 12™ appeals to educated consumers.
4. **Health indicators:** "Recent research suggests that minerals play a significant role against a variety of degenerative diseases.
5. **Minerals are hard to come by in an ordinary diet:** Dr. Alexander Schauss states that, "Soil erosion leads to the depletion of essential nutrient elements in crops grown in depleted soils. When people consume a diet derived from such crops, the intake of essential elements becomes inadequate. This leads to the impairment of relevant physiological functions, and causes disease."¹

Why Spectra 12™ wins every time

1. **Effective:** People do feel the difference when taking **SPECTRA 12™**. Thus, you will gain loyal, repeat customers because they will actually feel better.
2. **Balanced:** **SPECTRA 12™** carries a natural mineral balance that is similar to healthy body fluids. This is critical because the balance of one mineral to another is a web of complicated interactions. If one mineral is too high or too low it can cause an imbalance of another mineral, which can in turn cause an imbalance of another and so on. In short, we haven't attempted to create in a lab what nature took thousands of years to do.
3. **Ionic:** Ionic means that the minerals are in their smallest molecular structure, and as such, can conduct electricity. The body relies on ionic minerals to conduct and generate billions of tiny electrical and other energy impulses every second. "Many vital body processes depend on the movement of ions across membranes."²
4. **Natural:** **SPECTRA 12™** is 100% natural and vegetarian.
5. **Standardized:** Strict quality control ensures that **SPECTRA 12™** is a standardized product.
6. **Highly bio-available:** Dr. Paris Kidd states that "mineral should be ionic to be readily absorbed through transfer in the small intestine."³

Trace Minerals: Natural Balance, Perfect Solution

Balance is important to all areas of our lives and nutrition, but it is particularly crucial when it come to mineral and trace minerals:

There are 92 elements found in nature and an additional 22 theoretical and/or observed elements. In addition, there are hundreds of isotopes of the elements, any one of which may play an as yet undiscovered role in human health . . . It becomes increasingly evident when studying the relationship of mineral to human health that keeping the level of mineral in balance in every tissue, fluid, cell and organ in the human body may be the key to maintaining human health.

Keeping minerals in proper balance throughout the body while providing all of them in sufficient quantities needed for optimal health is complex. This is further complicated when using a bullet approach based on the latest research that finds specific deficiencies and then supplements the diet with just that particular

nutrient:

The complexity of the mineral imbalance problem is apparent. It is also apparent that our understanding of the mechanisms of mineral imbalances is fragmentary. New interrelationships are constantly being discovered. We are presently recognizing and correcting only a small fraction of the mineral imbalance problems plaguing animals and man.

Imbalanced interactions cause many problems when we consistently consume single processed or refined minerals that are out of proportion with the other minerals and trace minerals. This is particularly evident when it comes to the most commonly refined mineral that Americans take into their diet, sodium chloride and its effects on hypertension:

Clearly, nutrients function interactively both in the body and in their impact on blood pressure regulation. Whenever the consumption of a single nutrient is significantly altered, an entirely new dietary pattern is created. Nutrients occur in clusters in the diet and may therefore act synergistically to alter physiologic variable such as blood pressure.

These relationships can, however, have an equally profound benefit on human health when minerals are consumed in proper ratios. Certain minerals and trace minerals, when found in proper balance, can serve additional non-classical roles such as acting as antioxidants. Mineral and trace minerals can also help each other in the process of assimilation and add additional safety buffers for mineral that have the potential of being toxic to human health.

However, interrelationships of minerals and trace mineral are not nearly as evident when they are found in a dry or a non-soluble form. For instance, powdered copper and zinc could be mixed up in a ratio of a billion parts of copper to just one part of zinc. Additionally, other mineral and trace minerals in powder form could be mixed up in similar ratios without causing a reaction to occur, but if they made it into the blood stream in those same ratios, the results would be devastating to the body.

Within the blood stream, lymphatic fluid, cells and extra cellular fluid, mineral and trace mineral can be found completely dissociated into solution, which can also be called electrolyte or ionic form.⁴ In this state, they all have specific positive or negative electrical signatures that cause a dynamic equilibrium to take place. The

body can use minor changes in this equilibrium to create proper osmotic pressure and move nutrients to the areas that need them most and create electrical impulses that run the entire nervous system.⁵

This same equilibrium can also be found in the seas around the world where minerals and trace minerals have collected and concentrated in liquid ionic form for millions of years. It is astounding to realize that the dynamic equilibrium that takes place with liquid ionic minerals and trace minerals has created the same basic balance in sea water that is found in healthy blood plasma and lymphatic fluid.

References:

1. Schauss, Alexander. *Minerals and Human Health: The Rationale for Optimal and Balanced Trace Element Levels*. Life Sciences Press: 1995, pp. 1,5.
2. Hoekstra, W.G. Federation Proceedings. National Academy of Sciences: Washington, D.C. (Sept./ Oct., 1964).
3. Reusser, M.E., McCarron, D.A. *Nutrition Review*, 1994: 52; 367-375.
4. American Medical Association. *The American Medical Association's Encyclopedia of Medicine*. Ed. Charles B. Clayman. Random House: 1989, pp. 396, 605, 752.
5. Utah Geological and Mineral Survey. Bulletin 116., University of Utah: 1980, p. 198.

“Lighten Up” With Minerals

Every second of every day, your body relies on ionic minerals and trace mineral to conduct and generate billions of tiny electrical impulses. Without these impulses, not a single muscle, including your heart, would be able to function. Your brain would not function and the cells would not be able to use osmosis to balance water pressure and absorb nutrients. In fact, “many vital body processes depend on the movement of ions across cell membranes.

Recent research indicates that minerals may play a significant role against a variety of degenerative diseases and processes. They may also prevent and reduce injury from environmental pollutants and enhance the ability to work and learn. They can also protect the body from the effects of toxic minerals.”

The “Power” of Electrolyte Trace Minerals . . .

The form of different minerals also plays a key role in how well they are

transported through the circulatory system and the aqueous microenvironment of the cells.

Whatever the nutritional potential of a food, its contribution is nonexistent if it does not pass the test of absorption. "Those minerals that your body is unable to break down to their ionic form are likely to pass completely from the body unassimilated, and for all nutritional intents and purposes, were never eaten.

Minerals should be ionic to be readily absorbed through transfer in the small intestine. They also have unique properties that distinguish them from each other, and allow them to freely take part in biochemical communication throughout the body. These communications help nutrients move to those areas of the body that are in the most need of their help. "Imbalances of any of these ions or certain trace ions in the body can lead to dysfunction in the conduction of electrical messages. This dysfunction quickly leads to a general body disturbance and loss of ability to maintain somewhat stable internal conditions."

The light bulb demonstration is a simple yet effective scientific experiment to show how well different minerals break down into ionic solution in water and their concentration in that form. The experiment uses a broken circuit from the electrical cord that is connected to two probes which are then inserted into distilled water, it will connect the circuit and light the bulb in direct relation to how well it breaks down into ionic solutions and its concentration in ionic form. If a mineral does not break down in water, it will not light the light bulb.

Trace Minerals that are in ionic form make all the difference . . .

The natural mineral and trace minerals found in SPECTRA 12 are very low in sodium, yet rich in magnesium, boron, selenium, lithium, chloride and other trace minerals. Most importantly, they are in ionic form.

References:

- a. Schauss, Alexander. *Minerals and Human Health: The Rationale for Optimal and Balanced Trace Element Levels*. Life Sciences Press: 1995, pp. 1,5.
- b. American Medical Association. *The American Medical Association's Encyclopedia of Medicine*. Ed. Charles B. Clayman. Random House: 1989, pp. 396, 605, 752.
- c. Rosenberg, I.H., Solomans, N.W. *Absorption and Malabsorption of Mineral*

- Nutrients*. Alan R. Liss: 1984, p.2.
- d. Nielson, Mark T. *Ions: The Body's Electrical Energy Source*. 1993, p.3.
 - e. Watts, David L. *Nutrient Interrelationships: Mineral-Vitamins-Endocrines*. Reprinted from *Journal of Orthomolecular Medicine*. Vol. 5, Number 1, 1990, p.1

MINERAL SUPPLEMENTATION IS NOW IMPERTIVE

As the soil becomes deplete of minerals, the seas become enriched with minerals . . .

Dr. U. Aswathanarayana states, "Soil erosion leads to the depletion of essential nutrients elements in crops grown in depleted soils. When people consume a diet derived from such crops, the intake of essential elements becomes inadequate. This leads to the impairment of the relevant physiological functions, and causes disease."¹ For millions of years, every sprouting seed and towering tree has dissolved minerals to ionic form and raised them from the depths of the soil where they could easily be washed away by water. To add to this problem, aggressive farming has further depleted the soils. Furthermore, many fertilizers and pesticide bind trace minerals in the soil so that fruits and vegetables absorb fewer minerals.

The importance of minerals in the soils and their effects on human health are not new concepts. Dr. Alexis Carrel, Winner of the Nobel Prize in Medicine in 1912, states, "Soil is the basis of all human life and our only hope for a healthy world.

All of life will be either healthy or unhealthy according to the fertility of the soil. Minerals in the soil control the metabolism of cells in plant, animal and man, and many diseases are created chiefly by destroying the harmony reigning among mineral substances present in infinitesimal amounts in air, water and food, and most importantly, in the soil. Even the AMA recognizes the importance of minerals in our diet. "Variations in the distribution of certain minerals in the environment are known to have an effect on health."²

The lack of minerals in our soil is evident through the need for constant fertilization. Plants need nitrogen, hydrogen, oxygen, chlorine, carbon, boron,

sulfur, potassium, magnesium, phosphorous, iron, zinc, copper, manganese, and molybdenum, some of which are commonly replaced through fertilizers to provide maximum investment. However, humans are known to additionally need organic forms of calcium, sodium, fluorine, bromine chromium, iodine, silicon, selenium, beryllium, lithium, cobalt, vanadium and nickel.³

This continual cycle of soil depletion and minor replacement of minerals through fertilization in conjunction with a diet of processed foods, has left many Americans deficient in minerals and trace minerals. This does not need to be the case. To discover where the minerals have disappeared, we need to follow the water cycle. As water goes from evaporation to precipitation, minerals are transported through rivers and streams where they are then collected in the seas - thereby creating a natural equilibrium.

References:

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3. Schauss, A.G. Keynote lecture, Texas Conference at Austin, October 28, 1982; and Schauss, A.G. Nutrition and Behavior. *Journal of Applied Nutrition*, 1983; 35:30-43.

Colloidal versus ionic form minerals

Colloidal minerals:

Clinical implications of clay suspension products sold as dietary supplements.

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In recent years, a plethora of oval colloidal mineral solutions have been appearing in the dietary supplement marketplace sold as mineral/trace element supplements. The following discussion is not intended to be an indictment against the purveyors of colloidal minerals, but to bring to light scientific evidence that challenges many

of the claims being made for these products. The natural products industry is under considerable challenge from many sectors to provide the public with truthful and non-misleading information about its products. If any sector of the industry is found to be misinforming the public, regulators will use these examples as evidence of why the industry should be significantly restricted in the marketplace. Consumers can only determine what is best for them if they are informed.

The purveyors of colloidal minerals have gone about their business aggressively informing the public about the importance of minerals and many trace elements in human health. For this effort, they are to be commended. Many minerals and essential trace elements (some still unproven), play a crucial role in human health, as do all the micronutrients and accessory nutrients. However, in their enthusiasm to inform the public about the importance of minerals and trace elements, exaggerated and sometimes totally unfounded claims are made for products, which lack scientific support and/or experimental evidence.

In an effort to locate the scientific support for many of the claims made for colloidal minerals, databases incorporating nearly 30 million papers published over the last 40 years were utilized, and not a single reference could be located that could support the claims being made for these products.

This is not to say that individuals who have taken colloidal minerals may not have benefited from such products. However, as the following discussions will demonstrate, this may involve some risk, even though the short-term benefits may be undeniable for some. For this reason alone, it is important to provide this discussion.

What are colloidal minerals? Basically, “colloidal minerals” are a mixture of clay and water. When water, the dispersing agent, is mixed with clay, the dispersed colloid, a colloidal mineral is created. How are sand, silt, and other compressed fine particles found in geologic formations different from clay?

Sand grades down into silt and the sandstone grades down corresponding into siltstone. The grains, like those of sandstone, form layers along which the stone readily splits and they are again composed of particles of quartz, feldspar, and mica.

The grains of silt grade down still further until they become very fine, less than 0.005, in diameter, to form what is termed rock flour. The minuteness of the grains gives this material property's so distinctive that it deserves a different name. Once it

has become moist, it is better known as clay. The various minerals in the clay are not easy to identify without the use of an electron microscope, as they may include silica, compounds of aluminum, iron oxide and small quantities of other materials. Some may have the glint of mica, while others possess the whiteness of kaolin (China clay). A mixture of clay and sand produces loam, while “marl” consists of clay and limestone.

Immense masses of clay were formed very recently, in terms of geologic time, particularly during the last Great Ice Age - about ten to twenty thousand years ago. As the glaciers traveled southward, the ice smoothed the rock it moved against.

As the glaciers spread, these masses of rock, and rock flour, spread across the land and drenched them with melt water. When the temperature conditions returned to normal, much of the surface was left as a sheet of clay with various rock fragments embedded in it. In essence, clay is a glacial byproduct found throughout the United States, Canada, northern Europe, northern Asia, and most of the United Kingdom, as far south as the Thames River.

The minerals in clay come from secondary minerals that have been re-crystallized in solution through geothermal forces from minerals primarily found in granitic rocks. Through a lengthy geologic process involving glaciations and weathering, the clays progressively form. Depending on the host rock source of the minerals, specific types of clay accumulate in the valleys. The most common examples are montmorillonite, a member of the Smectite Group, including nontronite, and the better-known mineral bentonite. Bentonite has been used for many years as a bowel-cleansing agent in the natural products industry. Montmorillonite is the dominant clay mineral in bentonite. Bentonite has the unusual property of expanding several times its original volume when placed in water. Other examples of common clays are kaolinite, and vermiculite.

These clays contain aluminum silicates.

This is supported in the discussion of clays in *Dana's Manual of Mineralogy*, 18th Edition, (C.S. Hurlbut, John Wiley & Sons: New York, 1971, page 436) a standard reference work since 1912 in the field of geology: “Clay minerals are essentially hydrous aluminum silicates. In some, magnesium or iron substitute in part for aluminum, and both alkali or alkaline earths may be present as essential constituents.” Similarly, Vander's and Kerr's Mineral Recognition (John Wiley &

Sons, New York, 1967, page 273) supports Hurlbut's definition of clay by stating, "They (clays) are essentially hydrous aluminum silicates, and are usually formed from the alteration of aluminum silicates."

This explains why some "colloidal minerals" contain between 1,800 and 4,000 parts per million of aluminum. By comparison, foodstuffs generally contain no more than 10 parts per million as bound complexes that are often difficult to absorb. Further, there is a lack of research on the long term effect of consuming aluminum containing colloidal minerals. In Alzheimer's disease, a condition characterized by progressive dementia and diffuse cerebral cortical atrophy, involving microscopic clusters of aluminum-containing neurofibrillary tangles and granulovacuolar degeneration of the neurons, researchers need to determine what role, if any, aluminum plays in this insidious degenerative disease.

To date, the only element of the mineral kingdom that seems to protect the brain from excess levels of aluminum is magnesium. Yet characterizations (analyses) of numerous colloidal minerals rich in aluminum often reveal very low levels of magnesium relative to the aluminum content. At present, aluminum is considered a "toxic" element. Many questions need to be asked and answered as to the safety of colloidal minerals, and the claims being made for the products that contain them..

Research on colloidal mineral use in humans

A search of databases encompassing nearly 30 million papers published over the last four decades found not a single reference or study on the use of colloidal minerals in humans! In addition, a search of over 2,000 medical and scientific journals, revealed not a single study on colloidal mineral intake in humans previous to 1990 or between the period of 1990 and early 1996. So where is the evidence of its healing enhancing benefits?

Quite possibly, anecdotal evidence is coming from individuals who needed mineral so desperately – that regardless of source (whether colloidal minerals, ionic mineral solutions, or mineral dietary supplements), they felt better for having taken it.

Colloidal mineral claims

One of the common claims being made for colloidal minerals is their "superior" absorption in the human intestine. In actuality, it is well known among physiologists

and nutritionists studying mineral requirements in humans that when an individual needs a mineral, they will absorb a higher percentage of that mineral from foodstuffs. If the mineral is in a charged or ionic state, absorption will be higher, since the small intestine absorbs many essential minerals/trace elements when in an ionic state. In the case of iron found in certain foods (i.e. red meat) bound to iron-rich complexes such as hemoglobin and myoglobin, the element need not be in an ionic state to be absorbed. However, if the iron is from a nonhemoglobin / myoglobin source, the iron must be in an ionic state to be absorbed. Basically, minerals are absorbed via absorptive mechanisms that permit their regulated uptake into the blood stream.

Consider this claim, which is made by some purveyors of colloidal minerals: “The absorption rate is . . . 10 to 12 times greater than elemental minerals taken in tablet form.” Where is the proof? Cite one study that illustrates that this is true. The implausibility of this statement comes from the fact that some minerals are absorbed at a rate of around ten percent of its total presence in a food or tablet. If one were to multiply this ten to 12 times, the amount would exceed 100 percent, which is impossible!

Many suppliers claim that their colloidal minerals are “negatively charged and thereby increase intestinal tract absorption.” This is news to gastro-entomologists and physiologists. The walls of the lumen of the small intestine are negatively charged when at a neutral pH of 7. This is where cation (+) mineral are absorbed. The wall is composed of mucopolysaccharides, which negatively ionize at a pH of 7. For this reason, the intestinal wall would repel negatively charged colloidal clay particles, since similar charges oppose each other.

Another claim some purveyors of colloidal mineral have made is that their minerals are “95%” absorbable. Again, cite one study that demonstrates this is true. In truth, the human body has evolved over thousands of years various mechanisms to prevent excessive intake of many minerals and trace elements to avoid life-threatening imbalances. This is well-known for electrolytes, where the body constantly attempts to maintain a fine equilibrium, otherwise organ failure would rapidly occur as would the death of trillions of cells, ultimately leading to a quick death. This is especially important, since the greatest amount of any mineral in some colloidal mineral products is sodium, a necessary but carefully regulated electrolyte.

Further, cells must maintain a balance of certain trace elements needed to regulate

hundreds of enzyme reactions in cells that contribute to efficient metabolism. To avoid imbalances of these trace elements within cells, the body has evolved highly refined mechanisms to regulate the flow of trace elements in and out of cells. For example, in the case of zinc, special metal protein carriers called metallotheionine transport zinc to cells. Should the body's bloodstream suddenly become flooded by zinc, the liver can deploy an excretory metal into the intestinal tract to be eliminated. Anyone familiar with the absorption, utilization, metabolism, and excretion of minerals and trace elements knows that any product truly able to cause a '95%' absorption of such elements, would be a hazard to human health. If such a product were available, given its potential toxicity risks, it would probably have to be tested as a drug, and go through extensive toxicity testing in animals and humans before ever being allowed into the marketplace.

Minerals are unquestionably essential to human health and metabolism. The issue is: Do colloidal minerals provide a safe and effective source of minerals and trace elements? The answer is: We do not know. Reviewing the work of the United States Department of Agriculture's (USDA) Human Performance Nutrition Center's work on minerals and trace elements, will reveal to the reader that decades of careful studies have been conducted on many of the forms of minerals and trace elements found in food, water or available as dietary supplements. This has allowed manufacturers of these products and healthcare practitioners to give customers and patients' guidance as to safe use of these products. Unfortunately, to date no such research exists on colloidal minerals.