

Introducing Isotonix[®]

Isotonix[®] products are unique in terms of the method of delivery. There is no ingredient in Isotonix[®] that cannot be found in any highly respected and traditional nutrient supplement. Only the formulation and the delivery to the body make it a unique product.

Careful Planning

We began planning the Isotonix[®] product line with the objective to formulate products using what we knew to be the best nutrient delivery system – the isotonic solution – and put that concept together with the finest quality nutritional ingredients available. The result - **Isotonix[®]**. One of the most important factors in selecting nutritional supplements is of this process: absorbency. A supplement can have the finest ingredients encased in an easy-to-swallow capsule and contain exactly the amount of nutrients you want, but if it isn't effectively absorbed, all of its positive factors are diminished.

The Key To Isotonix[®]

Absorption. That's the key to Isotonix[®]. Nothing taken orally can be absorbed into your system quicker than an isotonic fluid.

It's a scientific fact.

There is nothing new about isotonics *per se*, but the concept has been put to marketable use only within the last few years. The technology behind the isotonic concept has been used very successfully with a fluid replacement drink used by sports enthusiasts. Beyond that, there are few other innovations in the same class as Isotonix[®].

The Isotonix[®] Concept

To fully appreciate the enthusiasm we have for Isotonix[®], it helps to have a thorough understanding of how and why Isotonix[®] works the way it does.

All fluids in the human body have a certain concentration, which is called the osmotic pressure. The body's common osmotic pressure – which is isotonic – allows a consistent maintenance of all body tissues. In order for a substance to be used in the body's metabolism, it must be changed to the isotonic state.

The efficiency of absorption is also affected by the digestive system. All substances that are acted on in the stomach go through a degradation process (breakdown) before they can be passed through the opening from the stomach to the small intestine to allow absorption.

The digestive process can cause substances to lose some nutritive value and this whole process takes time!

The secret of the isotonic process is probably now becoming clear! When an isotonic substance enters the body, it will be absorbed into the bloodstream rapidly. With isotonic fluids, little nutritive value is lost making the absorption of nutrients highly efficient. There is nothing artificial about it. An isotonic fluid is nature's own nutrient delivery system. What could be more natural?

The Benefits of Isotonix[®]

All products are marketable when you have a story to tell. Telling the story and turning the advantages and features of Isotonix[®] into benefits for your customers will give you that “competitive edge” over traditional retailers.

1. *Advantage: Isotonicity.* Isotonix[®] products become isotonic when mixed with water. Isotonic solutions offer the fastest and the most efficient absorption of all oral forms of nutritional supplementation.

Benefit: Faster and more efficient absorption into the bloodstream increases the value of taking nutrient supplements. The health conscious consumer maximizes his dollars spent for nutrient supplements by choosing Isotonix[®].

2. *Advantage:* Isotonix[®] are liquid when mixed with water. In an informal survey, we found that nine out of ten people prefer a liquid supplement when given a choice.

Benefit: Liquids are more comfortable to take! Ask any parent how difficult it is to get a child to take that first pill or capsule! No more irritated throats or disgusting aftertaste. Imagine the time, savings and increased ease for the consumer who takes a variety of supplements. For those who simply cannot take conventional oral supplements, a liquid is a blessing!

3. *Advantage:* Isotonix[®] does not linger in the stomach. Since isotonic fluids pass through the digestive process and are rapidly absorbed into the bloodstream, many gastrointestinal discomforts can be avoided.

Benefit: No more unpleasant nausea or “stomachache”! Thousands who have shied away from supplements to avoid that “unsettled” feeling may find the answer when taking Isotonix[®].

4. *Advantage:* Isotonix[®] products are not encapsulated or compacted into a “form”. There is no need for fillers, binders, coatings, lubricants, disintegrators or artificial coloring. All ingredients in Isotonix[®] are from the finest sources available.

Benefit: Consumers don’t need another form of unnatural supplementation! Isotonix[®] naturally derived supplements are delivered to our bodies in the most natural way.

5. *Advantage:* Fructose! Only fructose, which is the natural sweetener of fruit, met the stringent requirements to make Isotonix[®] products good tasting.

Benefit: Why not take a nutrient supplement in the easiest form that tastes great? Isotonix[®] offers you natural sweetness and flavor in an effervescent liquid.

6. *Advantage:* The Isotonix[®] package is designed not only to contain the product but also to be functional! The durable plastic bottle protects the product, plus the overcap functions as the pre-measured drinking cup. The amount of water added to the nutrient is critical for isotonicity.

Benefit: Isotonix[®] offers an all-in-one product. There is no guesswork involved, which assures the consumer that he or she is getting the exact amount of nutrients in the exact isotonic state desired. Isotonix[®] is easy and convenient to take with you when you’re traveling.

The delivery efficiency of Isotonix[®] products helps to ensure that maximum benefits are derived from the supplements. Because the nutrients arrive at the absorption site more rapidly and in an isotonic state, excellent utilization of the nutrients should be achieved.

The Meaning of “Isotonic” in Physiologic Terms

Market America’s Isotonix[®] nutritional formulas are an **osmotic adjuvant system** composed of a series of related formulas. All of the formulas may be used to manufacture products for use in human nutrition that, when prepared for ingestion as solutions are of the same osmotic pressure (or **osmolarity**) as most of the fluids in the human body. By definition, these solutions may be called **isotonic** “equal tonicity”.

Specifically, the fluid pressures of the solutions across semi-permeable membranes (the walls of the small intestines, for example, are semi-permeable membranes) in biological systems are generally referred to as having a particular osmolarity. For the purposes of this discussion, the osmolarity is measured in units referred to as milliosmoles/kilogram (mOs/kg). It can be said that when solutions on opposite sides of a membrane have the same osmolarity, they are iso-osmotic or isotonic, regardless of whether that osmolarity is 100 mOs/kg or 650 mOs/kg.

However, in human medicine that definition is considerably narrowed. Normal human blood serum (the fluid portion of the blood without cells and platelets) has an osmolarity of 288.6 mOs/kg, as do most other fluids in the body (notable exceptions being sweat and urine). Therefore, in human medicine when a solution's osmolarity is the same, or nearly the same as that of normal human blood serum, it is referred to as **isotonic**.

Black's Medical Dictionary defines isotonic as follows: "ISOTONIC is a term applied to solutions that have the same power of diffusion as one another. An isotonic solution in medicine is one that can be mixed with body fluids without causing any disturbance. Solutions that are weaker or stronger than the fluids with which they are intended to be mixed are known as hypotonic or hypertonic respectively."

In 1905, P. Carnot and A. Chassevant, French physiologists, reported that isotonic saline (0.9% sodium chloride) solutions administered orally to dogs emptied from the stomach more rapidly than either a hypotonic solution (water) or a hypertonic solution (3% sodium chloride). Over the following 91 years, this physiologic phenomenon has been repeatedly verified in many species of animals and in humans. Researchers at the University of Leeds, Guy's Hospital in London, Baylor University, and the Mayo Clinic, among others, have shown that not only do isotonic solutions leave the stomach faster, but also that the osmolarity of the stomach contents (its osmotic pressure) is one of the controlling mechanisms for the rate at which the stomach empties.

Micronutrients (vitamins and minerals) are most commonly consumed in solid (tablet or capsule) form. These solid forms must be broken down in the stomach and the active ingredients (micronutrients) must then dissolve in the gastric fluids in the stomach. This disintegration and dissolution process is often slower than any other process involved in the absorption of a micronutrient or a drug. When the active ingredients have dissolved, the body must adjust the concentration of the stomach contents to become an isotonic solution before the contents can proceed into the small intestine for absorption. If there are any foods or beverages in the stomach at the time the tablet or capsule is taken, the active ingredients will be delayed further in their transit to the small intestine until the food is properly prepared to leave the stomach.

Absorption into the bloodstream is a function of surface area, and the small intestine has a huge surface due to its length, its many folds, and the microvilli (minute finger-like projections) on intestinal epithelial cells. In comparison, the surface area of the stomach is very small, and the absorption that occurs there is negligible. The fastest and greatest absorption takes place in the small intestine.

Remington's Pharmaceutical Sciences states that, "When drugs and micronutrients are administered in solid dosage forms (capsule, tablets, etc.), the rate at which the drug is released in solution may be often the slower than any other process involved in absorption, so that *dissolution becomes the rate-limiting factor on absorption.*" It says further: "The motility (motility refers to the movement or contractions of the stomach which cause it to empty) of the stomach is more important to the rate at which an orally administered drug is passed on to the small intestine than is the rate of absorption from the stomach itself, since for various reasons stated above, absorption from the stomach is of minor importance." In addition, it states that: "The average emptying time of the stomach is about 40 minutes, though it varies according to contents, reflux and physiological factors, and the action of certain autonomic drugs or disease. The effect of food to delay absorption is due in part to its action to prolong emptying time. The emptying time causes a delay in the absorption of the drug."

It should be clear from the information provided above that there is a strong scientific basis for Market America's Isotonix[®] nutritional supplements based on the osmotic adjuvant system. Even a casual search of the literature will reveal a large body of experimental data supporting these concepts. See the next page for some literature references.

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The Most Frequently Asked Questions and Answers

1. What does “%DV” stand for?

%DV stands for Percentage of Daily Values. The %DV’s for essential nutrients are established by the Committee on Dietary Allowances of the Food and Nutrition Board of the National Academy of Sciences. These “recommendations” are based on the judgement of the Committee as to available scientific knowledge regarding the known nutritional needs of almost all healthy individuals. As defined for, “almost all healthy persons”, there is no consideration given to special needs that require special nutritional attention.

2. What are some of the special needs %DV’s do not address?

There are many factors such as physical activity, climate, aging, chronic disease, dieting, smoking, alcohol and prescription drug use which constitute “special needs”. It is difficult to assess exactly how any one of these “special needs” may affect nutrient demand for an individual. However, an increased requirement for some nutrients would certainly be indicated for many individuals with “special needs.”

3. Do %DV’s pertain only to vitamin supplements?

No. The %DV’s are designed to reflect ALL of the vitamin and minerals consumed in one day, (food and supplements); these nutrients which occur in foods or are added to foods as fortification. The use of a 100% DV multiple vitamin serves as excellent insurance that at least the basic needs are met.

4. What is the shelf life of Isotonix®?

We extend the expiration date 18 months from production. However, if stored properly, they could stay potent up to 24 months.

5. Are Isotonix® products FDA approved?

Isotonix® and all vitamin supplements fall into a general category known as “nutritional food supplements.” This classification does not require FDA (Food and Drug Administration) approval. The fact that Isotonix® are unique because of the “delivery system,” doesn’t change the FDA’s position on classifying Isotonix® as a new method of oral administration.

6. How many calories are in Isotonix® products?

A single serving of any of the Isotonix® products contains about 10 calories. This would be equivalent to the fructose in three to four grapes or one-half teaspoon of honey.

7. Why is fructose in Isotonix® products?

Fructose is the sweetest of all naturally occurring sugars and helps make Isotonix® pleasant tasting with fewer calories. The consumption of fructose does not produce the extreme “highs” and “lows” in blood sugar levels like ordinary table sugar might. High blood sugar and insulin levels can be contributing factors in the development of certain diseases.

8. Are Isotonix® products hypoallergenic?

Current scientific literature cites no known instances of “vitamin allergies.” Many vitamin tablets available contain dyes, fillers, binders, coatings and extenders, which may cause allergic reactions in some people. The exclusion of these substances in Isotonix® products was carefully planned. We have received very few reports of allergic reactions.

9. What is the best time to take Isotonix® supplements?

Basically, anytime the stomach is empty, in order to take advantage of the “Isotonic state,” and principles of absorption and gastric emptying. The products may be taken in any combination as long as the amounts of powder and water are proportional. In one instance only should an Isotonix® product be taken with food to maximize vitamin uptake and that is with Vitamin B₁₂ Special Formula.

10. Who supplies the raw materials for Isotonix[®] products?

The vitamin and mineral ingredients used in formulating Isotonix[®] are produced by some of the foremost pharmaceutical and chemical manufacturers in the world. These companies include, but are not limited to: Hoffmann-LaRoche, Pfizer and Mallinckrodt Mkg. All of the ingredients meet the rigid specifications of the United States Pharmacopoeia (USP), National Formulary (NF) and the Food Chemicals Codex (FCC). Although Isotonix[®], as nutritional food supplements, do not require the approval of the Federal Food and Drug Administration (FDA), all of the ingredients used in Isotonix[®] products have been FDA approved.

11. How is quality control assured in the formulation of Isotonix[®] products?

The Isotonix[®] products are tested at independent contract testing labs as requested by Market America and our manufacturer. The Isotonix[®] formulas are designed to provide 115% of the label claim for each nutrient during the manufacturing process. Current United States Standards require that products like Isotonix[®] contain no less than 100% of the label claim. Therefore, we have taken additional steps to assure the label claims are met.

12. Can you take more than one Isotonix[®] supplement at a time?

Yes! You can take up to four total servings at one time (eight ounces.) You should wait about 15 minutes before taking any more. This allows your stomach time to empty.

13. Can several of the Isotonix[®] products be mixed together, or do you need to mix them separately?

All of our Isotonix[®] products can be mixed together. Just be sure not to take more than eight ounces at a time and make sure you take them on an empty stomach.

14. If the product loses its fizz, does it lose its potency?

No. The ingredient of potassium bicarbonate has separated from the product. Shaking will remix the product. The fizz is there to help the ingredients dissolve, not to give it potency.

15. Can you pre-mix the Isotonix[®] supplement and refrigerate the mixture for later use?

It is preferable to mix the ingredients and drink them in a reasonably short period of time.

Objective

The Product At Work

Physical fitness has become a modern way of life for many Americans. One of the keys to keeping physically fit is good, sound nutrition. Wholesome food, properly prepared, will go a long way in this area, but the stress of increased physical activity often make supplements a wise choice to ensure nutritional adequacy.

Isotonix[®] products are well suited for those who are engaged in athletics. From the once-a-week golfer to the marathon runner, Isotonix[®] products can be used to sustain your nutritional requirements. It helps to rapidly replace nutrients used in strenuous activity. The use of fructose as a sweetener is very advantageous, because it leads to a much lower rate of muscle glycogen depletion, compared to glucose. This is because fructose does not cause a rapid rise in either blood sugar or insulin. It provides a steadier supply of blood sugar and helps the energy stored in the muscles last longer. This carries the potential for greater endurance during periods of sustained exercise.

Isotonix[®] products also help to maintain the sodium-potassium balance by replacing potassium lost during heavy physical activity. Much potassium is lost through perspiration. The potassium in Isotonix[®] products will help maintain proper potassium levels in the body.

Medical Evidence

The control of gastric emptying is a function of solution osmolarity, pH, and peristaltic action. Solutions that are isotonic with reference to human physiology, have the same osmolarity as body fluids such as plasma, tears, lymph and gastric solutions. Solutions that are of a lower osmotic concentration than plasma are called hypotonic, while solutions of a higher osmotic concentration are called hypertonic.

Carnot and Chassevant first reported the idea that isotonic solutions exert a controlling influence over the rate at which the stomach empties liquids in their scientific literature in 1905. They found that saline solutions of the same osmotic concentration as plasma left the stomach more rapidly than dilutions of more concentrated solutions. Those studies have been confirmed in the more recent literature, and the mechanism by which this process takes place has been clearly identified.

The importance of this principle to Market America's nutritional supplement products is that because the nutrients leave the stomach almost immediately, they arrive at the absorption sites in the small intestine with little or no dilution. Since absorption across a semi-permeable membrane varies according to the degree of concentration, a high concentration of nutrients in the lumen of the small intestine leads to more efficient absorption of those nutrients.

Research shows that the greatest delay in the process of intestinal absorption is the time it takes for the materials ingested orally to leave the stomach. The stomach seeks to retain materials not arriving in an isotonic state until the stomach can adjust them to isotonic solutions. This includes the time necessary to dissolve solids such as tablets or capsules into solutions that can be equilibrated into an isotonic state. Generally speaking an average minimum dissolution time for pills and tablets is about 40 minutes. By then, an already isotonic solution would have been in the small intestine for some time.

This ISOTONIX[®] Nutritional Supplement is Packaged Ready-to-Use and Easy to Take. Just Follow These Simple Directions:

1. Remove the overcap from the bottle.
2. Unscrew the bottle cap.
3. Fill the bottle cap level with **Isotonix[®]**
4. Pour contents of bottle cap into the overcap or a glass.
5. Fill the overcap to the middle line with cold tap water.
6. Overcap Method: Allow the **Isotonix[®]** solution to fizz for 1 to 2 minutes in the overcap.
Glass Method: Pour water from the overcap into a glass containing **Isotonix[®]** nutrients. Allow solution to fizz for 1 to 2 minutes in the glass.
7. Drink the **Isotonix[®]** nutrient solution.
8. Replace the bottle cap.
9. Do not replace overcap on bottle. Save it for daily use.

For best nutritional results:

- Take **Isotonix[®]** products on an empty stomach, preferably 15 to 20 minutes before eating your first meal (or any meal) of the day. Exception: Vitamin B₁₂ Special Formula should be taken with meals.
- Keep container closed in a cool, dry place.
- Measure both the **Isotonix[®]** and water carefully to assure an isotonic solution.

SUMMER REMINDER

Isotonix[®] products are water-soluble, they are very hygroscopic, and high heat and high moisture will cause the products to solidify in the bottle. Products that are left in the trunk of a car or in an enclosed vehicle for an extended period of time are exposed to high heat conditions. Keep the product in a cool, dry place, out of direct sunlight. The best storage conditions would be those with as little temperature fluctuation as possible. Isotonix[®] products contain only natural preservatives and anti-caking ingredients. Flow-Guard, a natural ingredient made from Silica, is added to ensure a free-flowing product. Also, Calcium Sulfate and Apple Pectin are more natural ingredients that are added to help the product remain free flowing. Finally, even though the products may be partially caked and lack eye appeal, the vitamin and mineral potency is not diminished.

THE ISOTONIX[®] ADVANTAGE

ISOTONIX[®] products solve problems. The following is a list of consumer groups whose needs are met by the ISOTONIX[®] advantage:

1. **Geriatrics.** Isotonix[®] meets the special needs of geriatrics. As the body ages, the digestive system becomes less efficient at breaking down food – including vitamin pills, capsules, and tablets. Isotonix[®] products do not require digestion before being absorbed into the body's system and solve the aging population's increasing problem of vitamin efficiency. As the geriatric population of the world continues to grow, the market for isotonicity-based nutritional supplements grows as well.
2. **Dieters.** Isotonix[®] products are best taken on an empty stomach. The only nutrient of its kind in that respect. Individuals with low caloric intake need the necessary vitamins and minerals offered by Isotonix[®] products. When taken in the morning or before a meal, it can curb the appetite. Isotonix[®] products fill the void better than any other product.
3. **People on the go and meal skippers.** For those who don't eat breakfast, Isotonix[®] can be taken on an empty stomach first thing in the morning to provide the necessary get up and go to start off the day. Isotonix[®] can also be taken late in the afternoon on an empty stomach to get you through the day.
4. **Athletes.** Most coaches recommend no eating two to four hours before participating in athletics. Most athletes do not like the nausea caused by vitamin tablets when taken on an empty stomach, but they need their nutrients. Tablets must be taken with food; Isotonix[®] solves this problem.
5. **People who cannot hold their food down.** Some recovering alcoholics, anorexics, bulimics could benefit.
6. **People on a liquid diet.** Post-surgical patients, oral surgery patients.
7. **AIDS Victims.** One of the symptoms of people suffering from AIDS is that quite frequently the ingestion of solid food causes increased discomfort. Consequently, many AIDS victims won't eat, thus denying themselves desperately needed nutrients. Isotonix[®] products can provide vital nutrients in a pleasant-tasting liquid form.
8. **People who cannot swallow pills** have no problem with Isotonix[®].
9. **People with nausea or irritated stomachs.** People suffering from ulcers, upset stomachs, nausea, flu, or fever who don't want solid foods could benefit.
10. **People with hangovers.** A number of people have reported a reduction or elimination of hangover symptoms by taking some Isotonix[®] products.
11. **People with colon problems.** Some people with colon problems have experienced excruciating pain when undissolved vitamin pills become lodged in the large bowel. Because Isotonix[®] is a liquid nutrient, this problem is completely eliminated.
12. **People undergoing chemotherapy.** It is estimated that 25%-40% of patients undergoing chemotherapy experience nausea upon eating solid food. Therefore many chemotherapy patients deprive themselves of nutrients by not eating. Isotonix[®] addresses this problem by providing much needed (and rapidly absorbable) nutrients in a pleasant tasting liquid.
13. **Lactating and Pregnant Women.** Many women in this group become nauseated upon eating solids. Thus, a pleasant tasting liquid with 100% DV of many nutrients provides important health insurance.
14. **Women suffering from pre-menstrual syndrome (PMS).** A number of women have reported the reduction or elimination of PMS and related symptoms with the use of Isotonix[®] products such as Calcium Plus and OPC-3[™].

(Always seek advice from your physician before starting a supplemental regimen with any dietary (vitamin or herbal) supplements.)

ISOTONIX[®] OPC-3[™]

The History of Pycnogenols (or Proanthocyanidins)

In 1535, French explorer Jacques Cartier was leading an expedition up the St. Lawrence River in Canada where he and his men were trapped by bad weather. Cartier and his crew tried to subsist on biscuits and salted meat, but lacking fresh fruit and vegetables, his crew fell victim to scurvy. Some 25 crewmembers died before friendly Quebec Indians rescued the sailors, including Cartier. Cartier observed that the group of Indians were the same he had seen 10 or 12 days before suffering from the same illness that affected his crew. Now they appeared healthy and alert. One of the Indians named Agaya informed Cartier that he was cured by the liquid and residue from the leaves of a pine tree. In less than a week Cartier's crew was cured as well.

More than 400 years later, Jacques Masquelier read Cartier's diary and launched his own research. Eventually the doctor came upon the discovery of a whole new subclass of bioflavonoids called flavanes when he closely examined the pine bark. These flavane molecules are called Oligomeric Proanthocyanidins (OPCs).

Dr. Masquelier laid the foundation for much research into OPCs. Market America offers you OPC-3[™], a powerful combination of grape seed extract, red wine extract and pine bark extract.

OPC-3[™]

Free radicals are produced in the human body because of normal occurrences in our lives such as eating processed foods, breathing and exposure to toxins. For example, while sitting in the sunlight, a person can be exposed to ultraviolet B radiation, an ionizing radiation that damages skin cells by stripping electrons from atoms in small and large molecules. Atoms left with unbalanced (unpaired) electrons then become free radicals. OPC-3[™] neutralizes these free radicals and stops internal destruction. The ingredients of OPC-3[™] have been tested for decades at centers including the Pasteur Institute in Lyon, France and Cytotest Cell Research in Darmstadt, Germany. OPC-3[™] has been found to be non-toxic, non-teratogenic, non-mutagenic, non-carcinogenic, and non-antigenic.

OPCs Outstanding Safety Record

OPCs have been used in Europe under medical supervision for over 30 years with no reports of adverse effects. Over one million people worldwide use these valuable bioflavonoids daily. OPCs have been tested for safety by conventional scientific methods at leading research centers worldwide, including the Pasteur Institute.

The OPC-3™ Advantage

OPC-3™ contains a combination of oligomeric proanthocyanidins (OPCs) from sources that include grape seed, red wine and pine bark extracts. The grape seed extract is the superior source of OPCs, containing 92% of active ingredients compared to pine bark's 84% of active OPC ingredients*. The red wine extract contains flavonoids called leucocyanidins from the skin of red grapes. Leucocyanidins are bioflavonoids with powerful antioxidant properties crucial to their role in supporting the circulatory system. OPC-3™ also contains bilberry and citrus extracts, which are known to have effects of vision and histamine release, respectively. Together, this combination of OPCs is superior to any OPC product on the market in active ingredients and isotonic capability. This powerful formula will be delivered to your system the way nature intended it to be – in an isotonic solution that maximizes absorption. OPC-3™ has a pleasant natural grape flavor, is a vegetarian product, and mixes instantly when added to water. This product should be taken on an empty stomach for the fastest, most effective delivery of the active ingredient.

*Percentages established by D. Marie-Claude Dumon, University of Bordeaux, France.

How OPC-3™ Works

Our bodies are made up of molecules held together by electromagnetic forces. These chemical bonds are created with paired electrons. Free radicals are unstable molecules that have lost an electron and are unbalanced. Free radicals seek to replace the lost electron by randomly attacking nearby molecules and extracting desired electrons. One free radical can damage a million or more molecules in a chain reaction referred to as radical propagation, which leads to oxidative stress. Uncontrolled oxidation is very destructive. It is analogous to effects we see in our environment, such as the rusting of metal, the rotting of meat, the browning of apples or the hardening of old rubber. Oxidation in our body by free radicals is thought to be responsible for premature aging, wrinkling of skin, hardening of arteries, stiffening of joints, formation of cataracts, the initiation of cancer and much more. We are constantly exposed to free radicals via such processes as antimicrobial activity by white blood cells and the absorption of chemical additives in our foods. Our ability to fight free radical damage effectively is compromised by our inadequate nutritional choices or diets that contain limited amounts of antioxidants. Antioxidant supplementation is necessary if we are unable to reduce our exposure to free radicals, but wish to counter their effect. OPCs should be taken in conjunction with foods or dietary supplements rich in vitamin C, vitamin E, beta-carotene, and selenium.

Things to Know About OPC-3™

What is OPC-3™?

OPC-3™ is a natural food supplement that is made up of a combination of three very powerful bioflavonoids known as oligomeric proanthocyanidins, referred to as OPC. They are: grape seed extract, red wine extract and pine bark extract. These are natural plant products, often referred to as bioflavonoids, and can also be found in cranberries, peanuts and citrus peels. They have been shown to have powerful free radical scavenging activity.

What are Bioflavonoids?

Bioflavonoids are a group of low molecular weight plant substances with recognized antioxidant properties and with the ability to inhibit the activity of certain enzymes that cause inflammation in the body. Bioflavonoids are complex organic plant compounds found mostly in fruits and vegetables. They function as a co-factor or helper to the body's immune response to inflammation, allergy and infection.

Are oligomeric proanthocyanidins toxic?

Not at all. They are non-toxic, non-mutagenic, non-carcinogenic, and non-teratogenic (i.e., do not cause birth defects).

Why should I be afraid of free radicals?

Free radicals cause oxidative damage to cells and tissues. Damage caused by free radicals contributes to premature aging, the development of stiff joints and wrinkled skin. Free radical damage also plays a part in the degenerative diseases we associate with aging, such as arthritis, circulatory disorders, diabetes, liver cirrhosis, heart disease, arteriosclerosis, and others.

What does OPC-3™ do?

It delivers a powerful combination of natural free radical scavengers. OPCs can help to regenerate vitamin C and vitamin E to full antioxidant activity. OPC-3™ inhibits enzymes that cause inflammation. It reduces histamine production, thereby helping the lining of arteries resist attack by mutagens that can cause cardiovascular disease. It restores capillary integrity and improves circulation, making it a little easier for each cell to get the food it needs. For women, it has been known to help correct abnormal menstrual bleeding and cramps.

*The Food and Drug Administration has not evaluated these statements. This product is not intended to diagnose, treat, cure, or prevent any disease.

What makes OPC-3™ different from other pycnogenol products?

OPC-3™ offers three rich sources of OPC that are rated highest in total polyphenol content in a range of four to 92%. It is totally bioavailable, water-soluble and delivered the way nature intended it to be, in an isotonic solution. This product is in position to be absorbed within five minutes. This combination of OPCs makes OPC-3™ the most powerful, natural free radical scavenger, anti-aging and antioxidant product yet manufactured.

Is OPC-3™ safe?

Absolutely! OPC products have been used for over twenty years throughout Europe. Extensive clinical studies and laboratory research have revealed no evidence of human toxicity, allergic reactions, birth defects or carcinogenesis.

How long do OPCs remain in the body?

Approximately three days. OPCs circulate through body fluids and are bound to the collagen for about 72 hours before they are gradually eliminated through urine and perspiration.

Why should everyone take OPC-3™?

Free radical damage or oxidative stress is real. Everyone is subject to it. Free radicals have been linked directly to premature aging, arthritis, circulatory disorders, diabetes, liver cirrhosis, heart disease, arteriosclerosis and more. If you don't have adequate protection from free radicals, you could very likely age faster, and experience health problems you could have avoided. OPC is the most powerful natural free radical neutralizer and antioxidant discovered, and you get the best of all OPCs in OPC-3™. This product should be taken for life.

Where does the grape seed extract in the OPC-3™ come from?

Grape seed extract comes from two companies in the USA and Europe. You can imagine that anywhere there are grapes there will be proanthocyanidin/bioflavonoid extraction facilities. Due to the proprietary nature of our business, the names of the companies cannot be given out; however, we have found them to be reputable and have found that they have significant quality control procedures in place. The extraction process for grape seed OPCs is the same one used by the Pycnogenol producers, Horphag Ltd. The process involves isolating, drying and powdering grape seeds; extracting the proanthocyanidins using a combination of pressurized hot water, butanol and acetone as well as concentrating and drying the isolated compounds. The specific variety of grape is not known, but it is likely that a spectrum of red grape varieties is used for extraction. Remember that it is the extraction process that is selective for flavonoids and can be used on material from a variety of plant sources (pine bark, bilberries, citrus rinds).

Is there an elemental analysis of OPC-3™?

We do not have an elemental analysis on OPC-3™, although the individual extracts are checked for the presence of heavy metals on a lot-to-lot basis. OPC-3™ is not a significant source of minerals, but rather a complex mixture of literally scores of polyphenolic compounds.

Is there alcohol or sulfite in OPC-3™ from the Red Wine Extract?

The red wine extract that is used in Isotonix® OPC-3™ is a completely non-alcoholic product. The extract is made from the skin of grapes used to make red wine, but the crushed grapes are not allowed to undergo fermentation. Therefore, ethyl alcohol is never formed and does not have to be removed. "Red wine" extract is an inaccurate use of words. Also, alcohol evaporates on exposure to air. Since OPC-3™ is a dried product, by definition it cannot contain alcohol. Sulfites are usually added as a preservative for finished wine. Sulfite is not added to the initial grape crush or at any stage of the extraction process.

Are chemicals used in processing OPC-3™?

Water, butanol, and acetone are used in the extraction process. They are completely evaporated during processing.

Does OPC-3™ contain beta-carotene?

No.

Does OPC-3™ contain caffeine?

It does not, but it may contain caffeic acid, which is a low molecular weight phenolic compound. Caffeic acid is isolated along with other polyphenolic compounds and flavonoids including proanthocyanidins. Caffeine is not an antioxidant (it does not transfer electrons or hydrogens to electron-hungry free radicals), but caffeic acid does have documented antioxidant properties. Coffee (fruit seeds) and tea (Camellia sinensis leaves) are likely to contain both caffeine and caffeic acid.

Can OPC-3™ be taken with steroids?

You should take one or the other. Your physician needs to make a thorough assessment of steroids (e.g. prednisone) before you mix two products and confound the results. If you have been taking steroids, give yourself four to six weeks before taking the OPC-3™. Our experience is that there is no adverse interaction.

What kind of side effects, if any, can we expect during the first weeks of using OPC-3™?

Reported complaints – especially with saturation dosing – include headache, gastric discomfort, generalized itching, ankle swelling, facial flushing, and occasional dizziness. These are usually mild, self-limiting and subside within a day or two. Remember, you can always lower the dose to make acclimation to the product easier.

Can you take OPC-3™ or any other of the Isotonix® products in soda, juice, coffee, etc. rather than water?

It is not recommended. In order to keep the products in an isotonic form and to achieve the maximum delivery time it needs to be taken on an empty stomach with two ounces of water per capful of powder. To mix the products with anything else slows down the delivery time. Also, the extent of absorption may be lessened.

How to Take OPC-3™

Each capful of OPC-3™ contains 125 milligrams of bioflavonoids, of which five milligrams are oligomeric proanthocyanidins in an isotonic-capable base. That means that the OPC-3™ active ingredients will be delivered in the highest concentration to the small intestine, where most absorption of nutrients occurs. To start using OPC-3™ for its benefit as an antioxidant and free radical scavenger, take two level capfuls for every 150 pounds of body weight for the first seven days. This is referred to as the saturation dosage. Then, switch to a daily dosage of one capful per 150 pounds of body weight, as a maintenance dose. For example, if you weigh 190 pounds, you would take three servings of OPC-3™ per day for seven days, and then switch to two servings per day for long-term health maintenance. Any excess OPC-3™ will not be harmful since OPC-3™ is non-toxic.

OPC-3™ Ingredients

Grape Seed Extract 25 mg
Red Wine Extract 25 mg
Pine Bark Extract 25 mg

Bilberry Extract 25 mg

Derived from leaves and berry like fruit of a common European shrub closely related to the blueberry. Scientific studies confirm a positive effect on vision. Bilberry may prevent acute glaucoma attacks or play a role in the treatment of chronic glaucoma. It may also play a role in relieving menstrual problems; studies have found it helps to relax smooth muscles like those found in the uterine wall. Bilberry is non-toxic.

Citrus Extract (Bioflavonoids) 25 mg

Bioflavonoids are found in certain plants to act as light filters protecting the delicate DNA chains and other important macromolecules by absorbing ultraviolet radiation. They have been found to suppress the tumor-causing aromatase enzyme activity in human cells, which suggests they may contribute to the reduction of estrogen-dependent diseases such as breast cancer. Flavonoids also brought about a marked inhibition of liver damage caused by another toxin, carbon tetrachloride.

PROANTHOCYANIDINS

(vitis vinifera)

METHOD OF PREPARATION

1. Transfer the entire GRAPE SEEDS to a stainless steel percolator and extract with acetone at room temperature.
2. Repeat the extraction procedure, under the same conditions, until exhaustion of the crude herb/biomass.
3. Partially concentrate the percolates obtained under vacuum, at temperatures ranging from 20 – 50 degrees centigrade, until solvent elimination.
4. Filter the concentrate through a 0.45-micron filter.
5. Extract the filtered concentrate with butanol, until exhaustion.
6. Concentrate the purified extract obtained under vacuum, at a temperature not higher than 45 degrees centigrade, adding de-mineralized water and alcohol until no more butanol is present.
7. Atomize the aqueous solution obtained in order to dry the flavonoids.
8. Mix the product and sieve it.
9. Take a sample of the final product and send it to Quality Control for analysis.

NOTE: The ratio of starting material (e.g., grape seed) to finished product (e.g., OPCs) is about 100 kg grape seed to 1 kg extract.

ISOTONIX® ISOCHROME™

About Isochrome™

Isochrome™ formula is a unique combination of vitally important compounds including minerals, vitamins, amino acids, Co-enzyme Q₁₀ and enzymes. Isochrome™ features the significant nutrient Co-enzyme Q₁₀ to help enhance the body's energy production.

Market America is dedicated to the development of nutritional products to assist in fitness and weight management. Optimizing levels of essential nutrients, especially those involved in energy metabolism, can have profound effects on fitness and health. We believe that one product in particular, ISOCHROME™, has great potential in this regard. Together with exercise and reduced caloric intake, Isochrome™, represents the “missing link” in the weight loss puzzle.

If you are overweight, you are probably aware that lack of energy is a major problem. Fatigue, after eating is commonly reported, as well as energy and mood swings throughout the day. Perhaps you've been told to exercise as part of your weight-loss program. While that's good advice, you may have found that exercise made you feel exhausted and hungry. If all this sounds familiar, you're not alone. We believe that Isochrome™ can help change that.

Isochrome™ is a unique combination of vitally important compounds that provides nutrients that can enhance the effectiveness of most weight-loss programs. Included in Isochrome™ are ingredients that are considered to be key nutrients in the body's production of energy. The remaining nutrients are “assistants” that optimize the overall effectiveness of the formula. Each ingredient is a carefully tested nutritional substance, with abundant scientific studies to document safety and effectiveness.

Weight management, energy, and psychological stability play an important role in our daily existence. Isochrome™ is a unique combination of minerals, vitamins and enzymes that addresses these important areas.

CHROMIUM PICOLINATE

This essential trace mineral, which is deficient in nine out of ten American diets, promotes efficient function of the insulin hormone. Good insulin activity is important for hunger control, for stimulating metabolism, and for building and retaining muscle and vital organ tissue. The ability of chromium picolinate to retain muscle is important to dieters, since up to 30% of the weight lost on most diets is muscle tissue. Loss of muscle reduces metabolic rate and thus promotes weight rebound – the “yo-yo” diet syndrome. Chromium picolinate helps to keep the muscle and maintain or increase your metabolic rate while losing the fat.

CHROMIUM ARGINATE

Chromium arginate is a form of chromium bonded with the essential amino acid Arginine. Like chromium picolinate, it can help with insulin activity as well as protein, fat and carbohydrate metabolism. Chromium arginate is included in Isochrome™ because recent scientific reports and abstracts published in scientific and medical journals prove that it may be even more effective than chromium picolinate in fat metabolism. Just as calcium and fish oil made headlines in the 1980's many nutritionists believe chromium arginate is the supplement of the new millennium.

Important Roles of Chromium Picolinate and Chromium Arginate

1. Chromium helps protect cardiovascular health by prompting insulin sensitivity and/or reducing insulin secretion.
2. Chromium helps to lower elevated cholesterol levels.
3. Chromium helps to control blood sugar levels in mature onset diabetes.
4. Chromium helps preserve lean muscle mass; promotes the burning of excess fat.
5. Chromium helps control sugar cravings and influences appetite control.

L-Carnitine

L-carnitine is an amino acid that supports fat metabolism in the heart, organs, and tissue, and helps promote energy and stamina. L-carnitine is required by your body to burn fatty acids for fuel and is vital to fat metabolism. The primary function of L-carnitine is to transport fats into your cell's powerhouses called mitochondria, for conversion to energy. The business of living a full, active life requires energy. But muscle weakness and fatigue can leave you feeling listless and run down. Combat fatigue and promote energy and stamina with L-carnitine. L-carnitine is most useful for dieters, seniors, vegetarians, diabetics, athletes, and individuals that are suffering from chronic fatigue and muscle weakness.

Important Roles of L-Carnitine

1. L-carnitine plays an essential role in the transport of long chain fatty acids into the mitochondria of the cell, which results in additional energy.
2. L-carnitine is an amino acid that helps preserve lean muscle mass.
3. L-carnitine is a cofactor or helper to chromium in the utilization and absorption of chromium into the body.

Co-enzyme Q₁₀

Co-enzyme Q₁₀ is an essential nutrient that supplies the biochemical "spark" that creates cellular energy. Extensive clinical studies and basic science have documented the CoQ₁₀ is an integral part of the mitochondria, the sub cellular components (organelles) that are responsible for generating about 95% of the total energy required by the human body. Organs such as the heart, liver, kidneys, spleen and pancreas, which require vast amounts of energy, should contain high levels of CoQ₁₀. In fact, university studies verify that if levels of CoQ₁₀ decline to a 25% deficiency, these organs cannot meet their energy requirements and major health problems can result. Hundreds of scientific and clinical studies worldwide have shown CoQ₁₀:

- Nutritionally supports heart health
- Supports the body's immune system function
- Energizes your body's cells to enhance stamina and endurance
- Promotes healthy gum tissue

Important Roles of Co-enzyme Q₁₀

1. Coenzyme Q₁₀ is an important nutrient that supplies the biochemical spark that creates cellular energy.
2. Coenzyme Q₁₀ is an integral part of the mitochondria (the cell powerhouse) responsible for generating about 95% of the total energy required by the human body.
3. Coenzyme Q₁₀ improves respiratory energy production in heart cells.
4. Coenzyme Q₁₀ is effective in normalizing blood pressure.
5. Coenzyme Q₁₀ helps correct many diseases associated with the aging process.
6. Coenzyme Q₁₀ is essential to cell energy production and the production of body heat (thermogenesis). This is a direct result from the stimulation of a special body-heat generating tissue called brown adipose tissue (BAT). Thus, Coenzyme Q₁₀ helps promote effective weight loss.
7. Coenzyme Q₁₀ helps increase exercise performance and promotes an improved resting heart function.
8. Coenzyme Q₁₀ helps promote the immune system's ability to clear invading organisms from the blood.

Special Note: Coenzyme Q₁₀ is a significant nutrient. United States clinical trials are now under way at the Phase 2 level of the FDA approval process. Coenzyme Q₁₀ cannot be prescribed for medical treatment but can be shared as a food supplement in which millions can enjoy the benefits of such a gift. Coenzyme Q₁₀ has passed the toxicity studies required by the FDA for clinical trials, and no researcher has found any significant side effect of Coenzyme Q₁₀ at this time at any dosage or length of time.

Lipase – A Digestive Enzyme

The action of enzymes, much like electricity, cannot be visibly seen under most circumstances. Enzymes are the driving forces behind virtually all life processes. Digestion, in particular, relies upon specific enzymes secreted by cells in the digestive tract and pancreas to release valuable nutrients from your food. Lipase digests fat and plays a key role in breaking down food so that it can be absorbed from the intestinal tract and used by the body for energy.

Important Roles of Lipase

1. Lipase is an enzyme that plays a key role in digesting fat, so that it can be absorbed from the intestinal tract and used by the body for energy.
2. In Isochrome™, lipase is present to help the fat-soluble (and water-soluble) Co-enzyme Q₁₀ disperse more evenly in the Isochrome™ solution.

Important Roles of Boron

1. Boron is a mineral that has no daily recommended allowance because little is known about the nutritional requirements for boron in humans. There are indications that boron enhances the effect of vitamins that are deficient in the body; it affects some aspect of vitamin D₃ metabolism or is synergistic with vitamin D₃ in influencing growth, and current research findings show that dietary boron modifies the regulatory function.
2. Large amounts of boron are well tolerated in the body while signs of deficiency include depressed growth and a reduction in some blood indices, particularly steroid hormone concentration.

Important Roles of Potassium

1. Potassium is a mineral that maintains fluid balance in our body.
2. Potassium stimulates nerve transmission, muscle relaxation and insulin release.
3. Potassium is a mineral that promotes glycogen and protein synthesis.
4. Potassium promotes proper heartbeat.

Important Roles of B₂ (Riboflavin)

1. Vitamin B₂ promotes glycogen synthesis and supports energy production.
2. Vitamin B₂ helps the breakdown of fats while functioning as a cofactor or helper in activating B₆ and folic acid.

Important Roles of B₆ (Pyridoxine)

1. Vitamin B₆ helps to promote protein metabolism.
2. Vitamin B₆ helps breakdown glycogen and converts linoleic to arachidonic acid.
3. Vitamin B₆ aids in the synthesis of brain chemicals, niacin, antibodies, red blood cells, DNA and elastin.

Note: There is an extreme variation in the amount of biologically active enzymes in the assortment of products on the market. Market America's Isochrome™ contains only individually assayed batches of Lipase for their finished products, thus assuring potency as stated on the label.

ISOCHROME™ (one capful provides)

		%DV			%DV
Chromium (Picolinate)	100.0 mcg	**	Vitamin B ₂ (Riboflavin)	3.0 mg	175
Chromium (Arginate)	100.0 mcg	**	Vitamin B ₆ (Pyridoxine HC)	2.0 mg	100
L-Carnitine	20.0 mg	**	Coenzyme Q ₁₀	60.0 mg	**
Boron (Chelate)	2.0 mg	**	Lipase	5.0 mg	**
Potassium (Bicarbonate)	99.0 mg	**	** %DV not established		

ISOTONIX[®] CO-ENZYME Q₁₀ with VITAMIN E

A valuable supplement found in spinach, broccoli, nuts, meats and fish, Co-enzyme Q₁₀ (CoQ₁₀) is a fat-soluble nutrient that has a multitude of therapeutic benefits. At the cellular level, it serves to revitalize and energize the body's cells and immune system and contributes to increased stamina and endurance by fueling the body's energy production (adenosine triphosphate, ATP) cycle. CoQ₁₀ is beneficial to the body's cardio-vascular system, helping to protect and strengthen the heart, normalize high blood pressure without side effects in addition to enhancing mental alertness and brain activity for those with hypertension. The supplement has also been shown to bolster natural weight loss by speeding the body's metabolism of fat and it can even serve to control, and sometimes reverse, periodontal disease.

Your heart beats about 100 thousand times per day and about 36 million times each year. The energy that powers your heart begins at the cellular level and is initiated by the vital nutrient Co-enzyme Q₁₀. A Co-enzyme is a substance that is necessary to or supports the action of an enzyme. Co-enzyme Q₁₀, also known as ubiquinone, is a fat-soluble nutrient. It has a similar structure to vitamin K and is found in each of the 50 – 75 trillion cells throughout the human body, particularly in the heart, lungs, liver, kidneys, spleen, pancreas and adrenal glands.

Individuals over the age of 35 begin to decline in their ability to synthesize Co-enzyme Q₁₀; that is to produce Co-enzyme Q₁₀ from other chemical elements in the body. In addition to aging and poor eating habits, stress and infections also affect our ability to provide adequate amounts of Co-enzyme Q₁₀. The challenge for most individuals in obtaining Co-enzyme Q₁₀ on a daily basis is one's ability to choose the right foods containing this vital nutrient as well as ingesting the other nutrients necessary for your body to manufacture it. It is the combination of both processes that provide our bodies the right amount of Co-enzyme Q₁₀ for optimal health.

CoQ₁₀ is a powerful antioxidant on its own and in combination with vitamin E. The challenge for most individuals is to include CoQ₁₀ (as well as other nutrients necessary for the body to manufacture it) in their daily diet. As we age, it becomes harder for our bodies to synthesize CoQ₁₀ and stress and poor eating habits contribute to this problem as well.

What is Co-enzyme Q₁₀?

Co-enzyme Q₁₀ is actually a two-part compound that is composed of (1) a long, fat-soluble isoprenoid tail that anchors the molecule in the inner membrane of the mitochondria and (2) a quinone that is capable of accepting and transferring electrons through a portion of the respiratory chain. A Co-enzyme is a non-protein substance that helps enzymes carry out their metabolic function and is not consumed in the reaction. The "Q" stands for quinone and the "10" stands for the number of isoprenoid units in the tail portion of the molecule. Mammals generally have 10 isoprenoid units in the tail portion, but other non-mammalian species may have fewer units. Co-enzyme Q₁₀ is a critical biochemical link in the production of energy in the cell. Co-enzyme Q₁₀ is found in the cell membranes of all cells in our body, particularly in the inner mitochondria membranes, and it is especially concentrated in highly active organs such as the heart, lungs, kidneys, spleen, and adrenal glands. The mitochondria produce large amounts of adenosine triphosphate (ATP), which helps cells perform.

Since the manufacture of adenosine triphosphate (ATP) in the mitochondria is known to generate many harmful oxygen radicals, Co-enzyme Q₁₀ serves an antioxidant function in that location by neutralizing radicals. A key enzyme also requires Co-enzyme Q₁₀ in the Krebs's cycle (Citric Acid Cycle), which converts both carbohydrates and fat into usable energy for the cell.

Besides these functions within all cells, Co-enzyme Q₁₀ also works with vitamin E outside of the cell when both compounds are dissolved in circulating low-density, lipoprotein (LDL) particles carrying cholesterol. These two fat-soluble antioxidants help to prevent the cholesterol from oxidizing. Oxidized cholesterol is highly toxic to the endothelial cells and the smooth muscle cells that comprise the blood vessels. Oxidized cholesterol can contribute significantly to arterial plaque formation and atherosclerosis.

What is the Source of Co-enzyme Q₁₀?

While our livers produce small amounts of Co-enzyme Q₁₀ and this small amount is distributed to the rest of the body, we get most of these compounds from foods such as organ meats, muscle meats, fish, peanuts, spinach, soy and nuts. In the past it was difficult and very expensive to isolate sufficient amounts of Co-enzyme Q₁₀ from these food sources for the purpose of dietary supplementation. However, a Japanese company succeeded in synthesizing Co-enzyme Q₁₀ in 1977, thus making an important nutrient available to the world.

While there is substantial debate about the nature and definition of Co-enzyme Q₁₀ deficiency and its manifestations, it is well documented that individuals with congestive heart failure, cardiomyopathy, angina pectoris, and chronic gum disease or those who are obese have significantly lower tissue concentrations of Co-enzyme Q₁₀. Other people at risk of Co-enzyme Q₁₀ deficiency include cancer patients receiving the anti-cancer drug Adriamycin that can damage the heart and people taking cholesterol-lowering drugs of the HMG-Co-enzyme A reductase class. It has also been demonstrated that Co-enzyme Q₁₀ concentrations in various tissues begin to decline as we age.

The History of Co-enzyme Q₁₀ (Ubiquinone)

- 1956** Dr. Frederick Crane isolates this orange colored compound from beef heart at the University of Wisconsin
- 1958** Karl Folkers identifies the molecular structure of Co-enzyme Q₁₀
- 1961** Dr. Peter Mitchell at the University of Edinburgh in Scotland figures out how Co-enzyme Q₁₀ produces energy at the cellular level.
- 1972** Dr. Karl Folkers at the University of Texas begins using Co-enzyme Q₁₀ to promote a healthy heart and cardiovascular system
- 1974** Nisshin, a Japanese company, finds a way to synthesize and mass-produce Co-enzyme Q₁₀
- 1978** Dr. Peter Mitchell wins the Nobel prize in chemistry for his Co-enzyme Q₁₀ discovery
- 1981** Dr. Peter Langsjoen conducts the first study of Co-enzyme Q₁₀ and cardiomyopathy at the Institute of Biochemical Research at the University of Texas.
- 1982** 6 million Japanese take Co-enzyme Q₁₀ daily
- 1995** 10 million Japanese take Co-enzyme Q₁₀ daily
- 1999** US Co-enzyme Q₁₀ sales begin to climb

Why Don't More Doctors Use Co-enzyme Q₁₀?

According to Dr. Peter Langsjoen, the answer is found in the field of politics and marketing – not in the fields of science and medicine. Co-enzyme Q₁₀ is safe and has not produced any toxic side effects when ingested by humans or animal. It is listed in the 42nd edition of the *Physicians Desk Reference* as replacement therapy for a nutrient, and no adverse reactions are listed. The amount of Co-enzyme Q₁₀ in the body has a direct effect on the body's ability to produce energy. Dr. Karl Folker hypothesized that when Co-enzyme Q₁₀ levels dropped below 75% (resulting in a 25% deficiency) the body would open the door to illness and disease states. He further stated that when Co-enzyme Q₁₀ levels dropped below 25% (resulting in a 75% deficiency), death would occur.

What is a Safe and Effective Dose of Supplemental Co-enzyme Q₁₀?

Co-enzyme Q₁₀ has been used in maintenance doses of 30 to 60 mg while therapeutic doses have gone to 100 mg or more. The recommended daily dosage for health maintenance is 30 mg; however, non-toxic effects have been reported for daily dosages as high as 300 mg. Co-enzyme Q₁₀ can be taken with a meal containing some fat or, even better, in combination with soya or vegetable oil which enhances its absorption substantially. Co-enzyme Q₁₀ supplements are readily absorbed by the body. The safety of Co-enzyme Q₁₀ however, has not been established in pregnancy and lactation, so caution is advised in that area until more data becomes available. The circulating levels of Co-enzyme Q₁₀ take about 60-90 days to reach steady state, depending on the dose taken. Granular Co-enzyme Q₁₀, as used in Isotonix[®], is about equal to the oil-based form in terms of uptake from the small intestine and distribution throughout the body.

Co-enzyme Q₁₀ (one capful provides)

		%DV
Co-enzyme Q ₁₀	100 mg	**
Vitamin E (Acetate)	200 IU	**
Lipase	5 mg	**
Vitamin B ₂ (Riboflavin)	3 mg	**
Potassium (Bicarbonate)	99 mg	**

** %DV not established

ISOTONIX[®] MULTITECH[™]

MULTITECH[™] (Multi Vitamin/Mineral Formula)

“If a drop of prevention is worth a gallon of longevity, then preventative medicine, such as vitamins and minerals, are worth their weight in gold.” said Dr. Linus Pauling in 1976. That was good advice then and as we look to the future, vitamins and minerals will play an ever-increasing vital role to the well being of every individual.

What Are Vitamins?

A vitamin may be broadly defined as a substance that is essential for the maintenance of normal metabolic function, but which is not produced in the body and therefore must be consumed from sources outside the body. They are necessary components in the process of converting food to energy and in the growth and repair of body tissues. The reduction of vitamin levels over extended periods can result in vitamin deficiency. These shortages may lead to symptoms, which can include loss of appetite, loss of body weight, increased irritability and sleeplessness or constant drowsiness. Deficiencies of this nature can be easily reversed by adequate vitamin intake.

How many of us sit down at home to three complete and balanced meals a day? Very few! Fast-food restaurants, food fads, weight-loss diets and ever-increasing use of unfortified convenience foods have heavily influenced today’s eating habits. Modern processing and preparation techniques often rob foods of vitamin content, as can growth, harvest and storage conditions. We often come up short. It is up to us to make up the difference with supplements.

Life cannot be sustained without all the essential vitamins.

How Important Are Minerals?

As important as vitamins are, they are useless without minerals. Minerals provide a vital role in nutrition. Virtually no nutritional benefit from the various vitamins would be possible without the assistance of one or more key minerals.

There are a number of vital roles that minerals play in the body. In addition to their assistance in the metabolic process, minerals aid in the regulation of water and the electrolyte balance. Minerals are also pivotal in providing a sound skeleton and regulating the functions of our muscles and nerves.

Minerals are absolutely essential for good health to sustain life.

RE: Children's Vitamins

The United States Percentage of Daily Values (%DV) has two categories, one for children age two to four years and the second for adults and children four years of age and older. Children age two to four years, because of lower body weights and different metabolic rates, have a set of %DV's all their own. Isotonix® products fill the bill for many parents but the child's dosage should be 50% of the adult dosage. Parents should measure a ½ capful of the powder with only (1) one ounce of water. This would ensure that the solution is still "Isotonic" and still within the guidelines for kids age two to four.

Below are the percentage of Daily Values for both children two to four years and adults and children four years and older.

In regards to the OPC-3™ product, it should be noted that the FDA has not established percentage of daily values for any of the ingredients in the OPC-3™ product, even though all the ingredients are approved ingredients.

All Isotonix® products are non-toxic and USP or NF grade or better. The FDA lists the USP (United States Pharmacopoeia) and the NF (National Formulary) of official compendiums of approved ingredients in the Food Chemical Codex (FCC).

Percentage of Daily Values (%DV) for Children Ages Two to Four and Adults and Children Over Four Years

<u>Vitamins and Minerals</u>	<u>Children two to four years</u>	<u>Adults and children four years and older</u>
Vitamin A (Beta-carotene)	2500 IU	5000 IU
Vitamin D	400 IU	400 IU
Vitamin E	10 IU	30 IU
Vitamin C	40 mg	60 mg
Folic Acid	0.2 mg	0.4 mg
Thiamin	0.7 mg	1.5 mg
Riboflavin	0.8 mg	1.7 mg
Niacin	9 mg	20 mg
Vitamin B ₆	0.7 mg	2 mg
Vitamin B ₁₂	3 mcg	6 mcg
Biotin	0.15 mg	0.3 mg
Pantothenic acid	5 mg	10 mg
Calcium	0.8 g	1 g
Phosphorus	0.8 g	1 g
Iodine	70 mcg	150 mcg
Iron	10 mg	18 mg
Magnesium	200 mg	400 mg
Copper	1 mg	2 mg
Zinc	8 mg	15 mg

Ingredients for Isotonix[®] MultiTech[™] Formula (Multivitamin)

One capful provides:		<u>%DV</u>
Vitamin A Palmitate (Beta Carotene)	7500.0 IU	150
Vitamin B ₁ (Thiamin HCL)	2.6 mg	175
Vitamin B ₂ (Riboflavin)	3.0 mg	175
Niacin (Niacinamide)	40.0 mg	200
Vitamin B ₆ (Pyridoxine HCL)	4.0 mg	200
Vitamin B ₁₂ (Cobalamin)	15.0 mg	250
Folic Acid	400.0 mcg	100
Biotin	150.0 mcg	50
Pantothenic Acid (Calcium d-Pantothenate)	10.0 mg	100
Vitamin C (Ascorbic Acid)	120.0 mg	200
Vitamin D ₃	200.0 IU	50
Vitamin E (Acetate)	30.0 IU	100
Calcium (Carbonate/Sulfate)	50.0 mg	5
Chromium (Amino Acid Chelate)	25.0 mcg	**
Copper (Gluconate)	200.0 mcg	10
Iodine (Potassium Iodate)	150.0 mcg	100
Iron (Ferrous Gluconate)	4.5 mg	25
Magnesium (Carbonate)	12.0 mg	3
Potassium (Bicarbonate)	99.0 mg	3
Selenium (Amino Acid Chelate)	25.0 mcg	45
Silicon (Dioxide)	2.0 mg	**
Zinc (Gluconate)	7.5 mg	50

** %DV not established. In a base of Fructose, Glucose, Citric Acid, Maltodextrin, Silica, Fruit Pectins, Natural Lemon-Lime Flavor.

Might-a-Mins™ Children's Multivitamins

Might-a-Mins™ are naturally great tasting

Isotonix® Might-A-Mins™ uses fructose and glucose, both naturally occurring sugars, blended with a delicious, natural Mandarin orange flavor. Its powdered form is fun, fast and easy to prepare.

Might-a-Mins™ have no artificial ingredients

Isotonix® Might-A-Mins™ contains no artificial sweeteners like saccharin or aspartame. Like all Isotonix® products, Might-A-Mins™ has no artificial colors or artificial preservatives.

Phytonutrients

Most parents would agree that kids today don't always eat properly. Isotonix® Might-A-Mins™ Children's Multivitamin formula with Phytonutrients is the perfect way to fill the nutritional "gap" that today's lifestyles can create in our children.

Market America's Might-A-Mins™ Children's Multivitamins formula provides the recommended daily allowances of most vitamins and minerals needed by children. In addition to 12 essential vitamins and 10 vital minerals, we have added Phytonutrients (natural plant extracts) from a proprietary blend of fruits and vegetables. We have also added a special blend of Probiotics (good bacteria essential for proper digestion) to help replenish the good bacteria that can be flushed out with processed foods, antibiotics and elements like chlorine in water. The goal is to develop and maintain a natural balance in your child's digestive system, and probiotics do just that.

Might-A-Mins™ has also taken extra care in selecting the proper nutritional ingredients. For example, the Beta-carotene (a Vitamin A precursor) contains other naturally occurring carotenoids that include a healthy dose of lutein and zeaxanthin, both proven to support sound vision and healthy eyes. Its Vitamin E is from d-Alpha Tocopheryl Succinate, a naturally occurring source shown to be the very best source of Vitamin E when working in coordination with support nutrients.

What are Phytonutrients? Why are they important?

Recent discoveries in nutrition have changed our thoughts about what we eat and how we eat it. We now know that what one eats plays a significant part in the level of our health and well-being. One important discovery has indicated that plant-based foods contain a wide variety of important compounds in addition to vitamins and minerals that have the potential to enhance human health.*

While these natural plant extracts, or phytonutrients, are not considered essential for the body, they do play a vital role in helping the body help itself. Phytonutrients have been found to reduce oxidation, counteract environmental pollutants, and delay the onset of some heart problems and other adverse health conditions. They have even been shown to naturally help boost the immune system.*

Along with a carefully selected number of standard vitamins and minerals, Isotonix® Might-A-Mins™ also feature an proprietary blend of phytonutrients including extracts from apples, broccoli, carrots, cranberries, grapes, kiwi fruit, lemons, limes, oranges, peaches, pineapples, raspberries, spinach, strawberries and tomatoes.

The Probiotic Advantage

If your child has ever had an infection, you already know about the word "biotics." Antibiotics are among the most prescribed drugs for children. In most cases, the invading bacteria causing the sickness are killed by the antibiotics and the child returns to a healthful state. In doing so, however, you not only kill the bad bacteria, but you also kill off many of the "good" bacteria necessary for proper digestion and for breaking down foods into the nutrients our bodies require.

An important problem with today's diets falls within our "preprepared" food environment. As foods are processed and stored, they are stripped of vital nutrients and enzymes. Then, after you get it home, many of the remaining natural enzymes (or "good" bacteria) are simply cooked, heated and washed away. This leaves our bodies with the chore of trying to digest and extract nutrients from foods largely without the help of the food's own naturally occurring enzymes.

Research shows that if a person – including a child – takes antibiotics, many bacteria, good and bad, are wiped out, adversely altering the natural "flora" balance of the digestive tract. This can result in diarrhea, a very common side effect of antibiotics. Lactobacillus sporogenes, found in Isotonix® Might-A-Mins™ Children's MultiVitamins, is one of the most thoroughly studied probiotics. They help your body re-colonize the intestinal tract with naturally occurring "good" bacteria, resulting in better digestion, an ideal pH balance and ongoing colon health.*

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

ISOTONIX[®] B₁₂ SPECIAL FORMULA

Vitamin B₁₂ is essential for the normal functioning of all body cells, but especially those of the nervous system, bone marrow, and intestinal tract. Both folic acid and vitamin B₁₂ are involved in the normal development and functioning of the red blood cells and they work in conjunction to construct the genetic material of the cells. Folic acid is also responsible for normal utilization of amino acids and proteins.

Bad eating habits, digestive disorders, alcohol use and drug intake are all factors that may influence the availability of vitamin B₁₂ and folic acid in the body. Deficiencies in these areas can lead to problems in the circulatory, nervous and digestive systems and can adversely affect fat, carbohydrate, and protein metabolism. Vegetarians are particularly subject to vitamin B₁₂ deficiencies, because B₁₂ does not occur in plants (with the exception of peanuts) in any appreciable amount.

The normal requirements of these B-complex vitamins are small in comparison to some other members of the group, but they are very important. Isotonix[®] B₁₂ Special Formula gives our body the proper amount of vitamin B₁₂, vitamin B₂ (Riboflavin) and Folic acid. According to Robert M. Russell of the USRDA's Human Nutrition Center on Aging at Tufts University, Vitamin B₁₂ is probably the single most important nutrient adversely affected by aging.

Is It True That Vitamin B₁₂ Should Not Be Taken With Certain Isotonix[®] Products? Is There a Certain Time To Take the Vitamin?

Isotonix[®] Vitamin B₁₂ Formula can be taken with any of the other Isotonix[®] products. Vitamin B₁₂ can be used by individuals who have normal mechanisms for absorbing B₁₂ (cyanocobalamin) from the gut. Vitamin B₁₂ is like no other vitamin when competing for uptake into the intestinal mucosal cells.

First, dietary vitamin B₁₂ is released from protein complexes in meats, eggs and to a lesser extent, from peanuts during digestion by the stomach. Vitamin B₁₂ is solely a bacterial product that is incorporated into animal tissues or peanuts. As the stomach contents are being digested, a protein called Intrinsic Factor is also being secreted by parietal cells in the stomach.

This is a key event, because it is this protein that eventually aids the uptake of vitamin B₁₂. However, the acidic pH in the stomach prevents the intrinsic factor from binding chemically to vitamin B₁₂. As the intrinsic factor travels along with the digested food into the small intestine, the pH becomes more alkaline as digestive juices are added from the pancreas and liver. Eventually optimal conditions are achieved where by intrinsic factor can bind to vitamin B₁₂ and form a complex. This intrinsic factor -B₁₂ complex migrates into the lower one-third of the small intestine. It is in this anatomical location that the complex can be absorbed into the cells lining the intestine. Note that vitamin B₁₂, being a relatively large, charged molecule, cannot be absorbed effectively. Large amounts of vitamin B₁₂, as found in the Isotonix[®] formulation, might be able to force small amounts across the membranes.

For the greater part, vitamin B₁₂ must form this complex with intrinsic factor to stimulate its uptake by the small intestine. The complex in turn binds to receptors on epithelial cells lining the intestine. Receptors are specialized structures produced by cells that can capture specific molecules such as the intrinsic factor-B₁₂ complex. Once B₁₂ is transported into the cells, the intrinsic factor falls away from the cell back into the lumen (opening) of the intestine.

Vitamin B₁₂ makes its way across the intestinal cells to the blood vessels that supply the intestine and enters the circulation.

There are then additional proteins in the blood that act like intrinsic factor and intercept vitamin B₁₂, form complexes, and transport this vitamin to specific receptors on cells throughout the body.

You can see that vitamin B₁₂ absorption and its distribution through the body is highly regulated. Toxicity arising from overdoses of vitamin B₁₂ is not known to occur. Only about five micrograms are required per day to maintain a proper balance in the body. The half-life of vitamin B₁₂ in the human body has been estimated to be 800-1000 days, so you can see that this vitamin is highly conserved. The body conserves vitamin B₁₂ by the intestine reabsorbing this vitamin when it is excreted in the bile. So even if the supply of vitamin B₁₂ is limited, it takes a long time for a vitamin B₁₂ deficiency to express itself.

There are three disease states that can significantly curtail the product on intrinsic factor:

1. Stomach cancer
2. Removal of the stomach
3. Mutation in the Intrinsic Factor or the Intrinsic Factor-B₁₂ receptor genes (i.e., genetic basis)

People with any of these conditions cannot absorb appreciable amounts of vitamin B₁₂ and must receive this critical vitamin by intramuscular injection. For normal individuals, Isotonix[®] Vitamin B₁₂ Formula can be taken on an empty stomach, but taking it on a partially full or full stomach to make use of the Intrinsic Factor mechanism will enhance its effectiveness. All of the other Isotonix[®] products can be taken on an empty stomach.

Dr. James L. Wilmer
Director of Scientific Affairs
Market America, Inc.

Isotonix[®] B₁₂ Special Formula (one capful provides)

		<u>%DV</u>
Vitamin B ₁₂ (Cobalamin)	120.0 mcg	2000
Folic Acid	400.0 mcg	100
Magnesium (Carbonate)	40.0 mg	10
Potassium (Bicarbonate)	99.0 mg	3
Vitamin B ₂ (Riboflavin)	99.0 mg	175

In a base of Fructose, Glucose, Citric Acid, Maltodextrin, Silica, Calcium Sulfate, Fruit Pectins, Natural lemon-lime flavor.

ISOTONIX[®] CALCIUM PLUS FORMULA

Calcium, the most abundant mineral in the body, constitutes 1.5% to 2% of total body weight. More than 99% of the calcium is found in the bones. In addition to its major function in building and maintaining bone and teeth, calcium is also important in the activity of many bodily enzymes. The contraction of muscles, release of neurotransmitters, regulation of heartbeat, and clotting of blood all depend on calcium. The current U.S. percentage of daily values for calcium is 1,000 mg for adults. There has been considerable concern that this recommendation may be inadequate to maintain bone integrity, especially during periods of growth, pregnancy, and lactation. Pre-adolescent growing children may need two to four times as much calcium as an adult. The current recommendation for adults is 1,200 mg of calcium per day. During pregnancy and lactation the recommendation is also 1,200 mg per day. Calcium deficiency in children may lead to rickets, resulting in bone deformities and growth retardation. In adults, calcium deficiency may cause osteomalacia or muscle spasms and leg cramps. Low calcium intake also contributes to high blood pressure and osteoporosis.

Calcium and Osteoporosis

Many physicians are recommending calcium supplements in an effort to prevent osteoporosis. Currently, osteoporosis affects over one-third of postmenopausal women in the country. Recent clinical data suggests that aging men are also susceptible to this health condition.

Osteoporosis is a process in which bone is being 'reabsorbed' or destroyed at a faster rate than it is being formed. This results in loss of both bone minerals and the organic matrix. A decrease in height and a headache are generally the initial complaints. Ultimately, weight bearing bones, such as the vertebrae and hip, collapse and fracture.

A steady level intake of calcium is not the only factor involved. Many things play a role in causing osteoporosis including smoking, lack of exercise, low levels of magnesium, zinc, vitamin B₆, vitamin K, and vitamin B₁₂, a high alcohol intake and altered vitamin D metabolism. Primary prevention of osteoporosis involves reducing or eliminating these major risk factors as well as supplementation with calcium

Calcium supplementation is effective in decreasing the normal bone loss during aging and helping retard osteoporosis. Most physicians now recommend that their female patients take supplemental calcium to bring their daily intake up to 1,500 mg/day.

Important Roles of Calcium

1. Calcium is a major building block of bones and teeth. Bones support the body and act as a storage form of calcium and other minerals like magnesium in maintaining a mineral balance in our bodies.
2. Calcium has a critical role in blood clotting. It acts as a bridge between clotting protein and membranes of platelets.
3. Calcium is a major ingredient in skeletal and smooth muscle contraction.
4. Calcium adjusts the electrical activity of nerve and muscle cells in our bodies and initiates the changes in sodium and potassium conductance.
5. Calcium contributes to the osmotic balance of the body.
6. Calcium may decrease the incidence of colon cancer.
7. Calcium helps control high blood pressure.

Important Roles of Vitamin D3 in Conjunction With Calcium

1. The active form of vitamin D3 (1,25 dihydroxy D3) at the bone site increases active transport of calcium out of the osteoblasts into the extra-cellular fluid.
2. Vitamin D3 in the kidney promotes calcium and phosphate uptake by renal tubules.
3. Vitamin D3 promotes the absorption of dietary calcium and phosphate uptake by the intestinal epithelium and induces the production of several proteins involved in calcium absorption and storage.

Important Roles of Magnesium

1. Magnesium is necessary for the metabolism of potassium and calcium in adults.
2. Magnesium is essential for the mobilization of calcium from the bone.
3. Magnesium is necessary for normal functioning of the muscle and nervous tissue.
4. Magnesium is a component of the mineralized part of the bone.
5. Magnesium is necessary for the synthesis of all proteins, nucleic acids, nucleotides, cyclic adenosine monophosphate, lipids and carbohydrates.
6. Magnesium inhibits the formation and growth of calcium oxalate stones in the kidney and bladder.
7. Magnesium helps indirectly in reversing the effects of oxidative stress and lipid peroxidation as involved with the aging process.

Important Roles of Boron

1. Boron is a mineral that has no daily value percentage because little is known about the nutritional requirements for boron in humans. There are indications that boron potentiates the effect of certain vitamins which are efficient in the body. Boron appears to affect some aspect of vitamin D3 metabolism or is synergistic with vitamin D3 in influencing growth. Research findings show that dietary boron modified the regulatory function of vitamin D3.
2. Large amounts of boron are well tolerated in the body while signs of deficiency include depressed growth and a reduction in some blood chemistry indices, particularly steroid hormone concentration.

Calcium Intake Recommendations

(National Institutes of health consensus statement for optimal calcium intake 1994)

Birth – six months	400 – 600 mg/day
Six months – 12 months	400 – 600 mg/day
1 – 5 years	800 mg/day
6 – 10 years	800 – 1,200 mg/day
11 – 24 years	1,200 – 1,500 mg/day
25 and older (men)	1,000 mg/day
25 – 50 years (women)	1,000 mg/day
pregnant or lactating women	1,200 – 1,500 mg/day
postmenopausal women on estrogen replacement therapy	1,000 mg/day
postmenopausal women not on estrogen replacement therapy	1,500 mg/day

*Maximum intake recommended = 2,000 mg/day

*The turnover of calcium in humans is 100% per year in infants, 10% per year in children, and 2-4% in adults.

Isotonix[®] Calcium Plus (two capfuls provide)

		<u>%DV</u>
Calories	12	
Total Carbohydrates	3 g	1
Sugar	3 g	**
Calcium (Carbonate, Lactate, Phosphate, Sulfate, Citrate)	750 mg	75
Magnesium (Oxide, Carbonate)	200 mg	50
Manganese (Sulfate)	1 mg	50
Vitamin B ₂ (Riboflavin-5-Phosphate)	2 mg	118
Vitamin C (Ascorbic Acid)	58 mg	77
Vitamin D ₃ (Cholecalciferol)	400 IU	100
Boron (Sodium Borate)	1 mg	**
Potassium (Bicarbonate, Citrate)	225 mg	6

*%Daily Value is based on a 2000-calorie diet.

**%Daily Value is not established.

ISOTONIX MINERAL BLAST®

Everyone Needs Minerals

Many health authorities believe that most diseases begin with a nutritional deficiency, especially insufficient dietary intakes of essential minerals or trace elements. According to the 1992 Earth Summit Report and the U.S. Senate Document 264, mineral content in our North American farm and range soils is declining significantly. In fact, North American soils are as much as 85 percent deficient in mineral content. This means that edible plants are incorporating fewer minerals into their cells, and, as a consequence, we are getting inadequate amounts of minerals in our diets when we eat these plants.

Essential and trace minerals support many enzymatic and cellular functions in all tissues and provide structural material for bone and teeth formation. They generate and maintain electrical conductance in our bodies through their activity in or around nerve cells. Trace minerals are an essential part of hormone structure and help regulate hormonal activities. Minerals are necessary for the utilization of vitamins.

Isotonix Mineral Blast® is an efficient mineral supplement that sustains the body by complementing our daily diets.

What Are Colloidal Minerals?

Colloidal minerals are extremely small, electrically charged mineral particles that are created through the action of plants. They are dispersed particles that are greater in diameter than those of true solutions and less than that of suspensions. Colloidal particles can be thought of as aggregates of hundreds to thousands of molecules, which are hydrophilic, do not settle out of water, and cannot be filtered by ordinary techniques.

Minerals located in the soil are effectively chelated by fulvic acids (a specific fraction of humic acids) and absorbed into the plant's roots for eventual distribution throughout the entire plant. Geological processes have acted on large deposits of prehistoric plants and converted the plants to humic shale or clays. The humic shale/clays are mined, crushed, and extracted with pure water to isolate the colloidal mineral fraction.

Mineral Blast® is a plant-derived, colloidal minerals mix that contains 77 minerals and trace elements in one great product. Recent studies indicate that minerals delivered to your body in a colloidal state can maximize their subsequent use in cells.

What Is The Source Of Colloidal Minerals?

Mineral Blast's® colloidal minerals are extracted from the richest deposits of humic shale/clay in North America. Plants growing in the Cretaceous period over 65 million years ago formed these huge deposits of humic shale/clay.

These mineral-rich layers of organic matter formed by the plants apparently were buried by immense mud and rock flows. The tremendous weight of these sediments produced enormous pressure, which compressed most of the moisture out of the organic material. This process left large deposits of humic shale/clay rich in trace elements and minerals.

Humic shale/clay is the earth's greatest storehouse of minerals in colloidal form, being the product of immense stretches of time, the great pressure exerted by thick sediments, and fulvic acids secreted by ancient microorganisms into the soil.

The Mineral Blast[®] Advantage

The advantage of Mineral Blast's[®] plant colloidal mineral complex over traditional metallic mineral supplements is in the small size of the electrically charged particles dispersed in an isotonic solution, which is known as a "sol". These particles are considered to be dispersed, but not dissolved as individual molecules, in water. They range in size from 0.001 to 0.005 microns, some 1,000-5,000 times smaller than a human red blood cell. When prepared in an isotonic solution, the colloidal particles move quickly from the stomach into the small intestine where they are taken up by endocytosis upon contact with the intestinal epithelium.

Compared to other colloidal mineral products, Mineral Blast[®] offers not only a higher concentration of essential and trace minerals per dose, but also contains only 21% sulfur and 79% other minerals. Other products contain 50 – 78% sulfur and only 22 – 50% other critical minerals. Mineral Blast[®] offers a great value with its high quality ingredients, clean citrus taste, reasonable price, and convenience of preparation.

Are Colloidal Minerals Safe?

Mineral Blast[®] colloidal minerals are non-toxic when taken at the recommended daily dose of 200 mg. In contrast, positively charged metallic minerals in solution can bind avidly to cell proteins and phospholipids as well as dietary fiber such as cellulose. Thus, the uptake of unchelated minerals by the intestinal epithelium is inefficient and limited, and minerals can reach high concentrations in the intestines or be excreted without interacting with intestinal epithelium. Colloidal minerals are engulfed by intestinal cells and slowly release the complex minerals into the bloodstream as the particles dissolve within the cells. Therefore, since the colloidal minerals are hydrophilic "water-loving", they do not undergo digestion as foods do. The trace minerals are then transported throughout the body for uptake by cells. They can be incorporated subsequently into active sites of proteins, used as co-factors in chemical reactions, or stored in various organelles. Excess minerals that are not used by the body can be readily excreted.

More on Safety

The recent increase in popularity of colloidal mineral products has produced an influx of questions about safety and efficacy of mineral colloids. Colloidal trace minerals extracted from humic shale/clay is the chief focus of this report.

Grolier's Multimedia Encyclopedia (version 8.01) states that: "The Colloidal State lies somewhere between a solution and a suspension." Colloidal minerals from humic shale/clay are among the smallest crystalline particles known to exist and are neither a suspension nor a solution. This gives these colloids some special properties that larger size colloids do not exhibit. Colloids larger than 0.005 microns have difficulty moving through plant and animal membranes. These colloids are hydrophobic in nature, meaning they have an inherent resistance to interaction with water. Examples in nature include carbonates, sulfides, phosphates, framework silicates, aluminum and iron oxides, phyllosilicates and some clays.

The statement "colloidal minerals are not bioavailable" is true when discussing hydrophobic minerals such as calcium carbonate, zinc oxide or magnesium phosphates that are poorly utilized. These require a chemical reaction caused by the body's enzymes and hydrochloric acid before they can be of any value to the body's cells. Since colloidal minerals extracted from humic shale are chelated by fulvic acids (which are naturally present in organic matter), the statement that "All colloids do not diffuse easily through plant or animal membranes" is not accurate. Although no conclusive scientific evidence exists regarding the absorption of colloids (as compared to other minerals), the conclusion that colloids cannot pass through membranes of vegetable and animal matter is based solely on studies and experiments done with chemical colloidal substances larger in particle size than naturally occurring mineral colloids.

Plants take minerals from the earth in ionic and colloidal form via their root membranes. Studies conducted using colloidal trace minerals as a folial spray produced dramatic results in the health and growth rate of various plants. Since all minerals contained in cells of plants are in the colloidal form (not the molecular form) it can safely be assumed that colloids are indeed absorbed since they are in the right form, having particle sizes small enough to pass through the root or leaf of a plant. Humic shale/clay minerals have all passed through the root of a plant producing particle sizes much smaller than those used in any laboratory. Furthermore, since these minerals pass through the leaf and root of a plant with ease, why would they not also pass through the membranes of human tissues and cells with equal ease?

Colloids extracted from humic are 0.005 microns in diameter with particles as small as 0.001 microns in diameter. This diversity in size gives the mineral colloids some fascinating properties. The smallest aggregates easily pass through the cell membranes of tissue they contact while others lend themselves to ionic reactions or reaction with enzymes in the digestive tract preparing them for secondary chelation in the bloodstream. The secondary process rechelates some minerals with orotic acids, which then targets the specific mineral to specific areas in the body and cells. All molecular minerals eventually form colloidal aggregates since all human cells contain minerals in their colloidal form. For instance, since colloids have more than one molecule per particle they lend themselves easily to these biochemical reactions. This ability to move directly into cells while also entering various biochemical reactions makes humic shale/clay colloids superior to other minerals. Again, most of this is possible due to the small particle size and hydrophilic nature of humic shale/clay minerals.

Another half-truth presently being promulgated is that colloids, because they contain many molecules per particle, are always larger than other minerals that contain only one molecule. One example of this is a mineral chemically bound to an amino acid commonly called an aminoate. Proteins and all minerals chelated with protein are large molecules. Most colloidal mineral particles contain several groups of molecules that are smaller than most single protein molecules. Even an amino acid chelated tablet is liquefied and micronized with hydrochloric acid and enzymes before it is reduced to the molecular form. Try dissolving an amino acid chelated mineral tablet or powder in water if you doubt this.

ISOTONIX[®] VITAMIN C FORMULA

Vitamin C has become the world's most popular vitamin. One reason is because of its vital role in fighting infections (strengthening the immune system). Other vital roles vitamin C plays in the body involve the strengthening of the blood vessels and gums. There are also direct links between vitamin C and the promotion of tissue repair, wound healing, building connective tissue and collagen, and helping us to absorb iron. Although this may sound like a lot, the importance of vitamin C does not stop there. Studies have indicated that vitamin C may be of special benefit to people with high blood pressure, smokers, diabetics, and elderly men. Vitamin C can also act as a powerful suppresser of carcinogen formation as well as act as a leading protector against cataract formation. As a water-soluble antioxidant, vitamin C prevents vitamin E from becoming oxidized, thus preventing the premature aging and degenerative disease processes that inflict so many people. Another important role of vitamin C is its anti-stress capabilities. Vitamin C plays a major role in the ability to handle mental and physical stress.

The most convincing evidence suggesting our need for vitamin C supplementation is based on the fact that we, unlike animals, are incapable of producing vitamin C in our bodies. When studies were conducted on animals to see how much vitamin C they produced in relation to their body weight, it was determined that they produced roughly the equivalent of a human consuming 3,000-7,000 milligrams per day.

Historically, vitamin C is well known for its role in the prevention of scurvy, a vitamin C deficiency disease characterized by degeneration of such body tissues as blood vessels, bones and cartilage. Most fresh fruits and vegetables contain vitamin C, and the use of them to treat scurvy led to the discovery of vitamin C as the anti-scurvy factor.

Vitamin C participates in a wide variety of reactions that involve the skin, gums, bones, teeth, tendons, and muscles. Vitamin C's ability to take and give hydrogen may be significant to this purpose especially in the formation of collagen throughout the body. It is also needed for the formation of adrenal hormones and hemoglobin.

Low intakes of vitamin C are common in the United States. The elderly and low-income groups are often at risk due to excessive reliance on such foods as bread and cereals that contain no vitamin C. Stress may also account for reduced vitamin C levels in many Americans. Smoking and some drugs may also impair the body's ability to absorb vitamin C.

Since it is water-soluble, vitamin C is flushed from the body each day. Since we don't always eat foods containing an adequate amount of vitamin C, it often is beneficial to take a supplement.

Important Roles of Vitamin C

1. Vitamin C protects against vascular disease and scurvy.
2. Vitamin C protects against infectious diseases such as the common cold and influenza.
3. Vitamin C protects against cardiovascular disease because:
 - Hypocholesterolemic agent.
 - Alters triglyceride metabolism.
 - Helps to strengthen arterial walls.
 - Prevents oxidation of low-density lipoproteins (LDLs).
 - Reduces blood pressure.
4. Vitamin C aids in wound healing.
5. Vitamin C provides anti-tumor activity in the body.
6. Vitamin C provides relief from skeletal pain in various disorders such as bone metastases (cancer), Paget's disease of bone and osteogenesis imperfecta.
7. Vitamin C inhibits the production of carcinogenic nitrosamines in the stomach.
8. Vitamin C protects against hypersensitivity to allergenic substances.
9. Vitamin C protects against periodontal disease.
10. Vitamin C promotes a vitamin-sparing effect on multiple vitamins such as thiamin, riboflavin, pantothenic acid, biotin, folic acid cyanocobalamin, retinaldehyde and alpha-tocopherol.
11. Vitamin C is especially effective in helping regenerate vitamin E after oxygen radicals have attacked it.
12. Vitamin C improves iron absorption from the small intestine.
13. Vitamin C is an effective antioxidant, scavenging oxygen radicals.
14. Vitamin C is a cofactor or helper in the metabolism of folic acid, some amino acids and hormones.
15. Vitamin C protects against cancers of the oral cavity, esophagus, stomach, colon and lung, based on epidemiological evidence.

Important Roles of Potassium

1. Potassium is a mineral that keeps fluid balance.
2. Potassium stimulates nerve transmission, muscle relaxation, and insulin release.
3. Potassium is a mineral that promotes glycogen and protein synthesis.
4. Potassium is an electrolyte that promotes proper heartbeat.

Isotonix® Vitamin C Formula (one capful provides)

		<u>%DV</u>
Vitamin C (ascorbic acid)	500 mg	833
Potassium bicarbonate	99 mg	3

In a base of Citric Acid, Fructose, Glucose, Fruit Pectin, Maltodextrin, Malic Acid, Natural orange flavor, Silica, Calcium Sulfate.

ISOTONIX[®] ANTIOXIDANT FORMULA

Antioxidants

When free radicals are generated throughout the body, unregulated by a lack of antioxidants to deplete them, their mission is to attack the vital and delicate cell structures, including the lipid contained in the cell membranes. It is these free radicals that are known to damage both the cell structures and the function of the cell membrane. Free radicals are very unstable fragments of molecules produced from quite ordinary substances like oxygen or the fats in our bodies' cells. Certain factors in everyday life cause an ever-increasing amount of these free radicals to exist. Such factors include the air we breathe, the water we drink, and the food we eat. Each one of these daily necessities contains harmful reactants that can and do cause detrimental and degenerative effects to the body, such as cancer. The list of degenerative diseases that have been linked to free radicals is a very long one, and it is growing longer as research progresses. Some of the more common diseases linked to free radicals include rheumatoid arthritis, emphysema, atherosclerosis, senile dementia, retinopathies, and cardiovascular abnormalities. Market America's Isotonix[®] Antioxidant Formula contains a unique combination of these specific antioxidant vitamins: vitamin A (as natural beta-carotene), vitamin C (pure ascorbic acid), and vitamin E. Vitamins A, C, and E are recognized as the foundation of any effective antioxidant formula.

Several lines of evidence indicate that certain products of normal cellular metabolism called reactive oxygen intermediates (or oxygen free radicals) and reactive nitrogen intermediates (or nitric oxide) play an important role in tissue destruction with multiple sclerosis. One of the mechanisms by which these substances are thought to produce damaging effects is by starting a chain reaction in membrane fats that ultimately destroys tissues and contains lipids (or fats).

Antioxidants are substances that reduce lipid peroxidation and the buildup of cell-damaging oxygen free radicals and nitric oxide. Examples of antioxidants include vitamins A, E & C, selenium, beta-carotene and Co-enzyme Q₁₀.

The severity of experimental allergic encephalomyelitis (EAE), an animal model of multiple sclerosis, appears to be reduced when animals are treated with antioxidants. This gave rise to the idea that antioxidants would prove to be a useful therapy in MS.

Claims for therapeutic benefit from orally administered antioxidants have not been adequately tested in people with MS. The National MS Society is funding several research projects on the role of antioxidants in MS related tissue damage.

Donald E. Foodkin, M.D., Director of the Mt. Zion MS Center, University of California, San Francisco.

Isotonix[®] Antioxidant Formula (one capful provides)

		<u>%DV</u>
Vitamin A (Beta-Carotene ad the precursor)	10,000 IU	200
Vitamin C (Ascorbic Acid)	300 mg	500
Vitamin E (Acetate)	60 IU	200
Potassium (Bicarbonate)	99 mg	3
Selenium (Amino Acid Chelate)	100 mcg	182

In a base of Fructose, Glucose, Citric Acid, Potassium Bicarbonate, Maltodextrin, Silica, Calcium Sulfate, Fruit Pectin, Natural lemon-lime flavor, Riboflavin.