



Cell Nutritionals

Nourishing cells for life.™

A Sound Nutritional Approach to Creating & Maintaining Constant Health

By

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With an Introduction by

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Cindy Marteney, CEO, Cell Nutritionals



Cindy Marteney has studied alternative medicine intensively for over 25 years. Since 2002 she has led Our Health Co-op, a thriving nutritional supplements company serving educated consumers around the world.

Cindy has long been an advocate for premium supplement quality. She insists on purchasing only the highest-grade ingredients from a select group of proven suppliers. Her companies are among the very few in the industry performing independent testing programs on every product they sell.

Cindy conceived Cell Nutritionals as an adjunct to Our Health Co-op, with a strong focus on concentrated nutrition. All formulations are backed by strong, evidence-based science. She continually investigates the latest data, collaborating with key leaders in nutritional science to design, develop, and deliver the most effective products.

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Her blog is located at: www.ourhealthcoop.com/blog/cindy/blog.html



Introduction by Dr. Hugo Rodier

As a physician, I have aggressively studied nutrition for more than a decade. So, it has been a pleasure and an honor to collaborate on the creation of Constant Health™.

Over the years, I have concluded that if you focus on just one thing, it should be a healthy gut. With most of the immune system and many neurotransmitters located in the gut, enhancing gastrointestinal health should be a priority for everyone. For example, I have never seen neurological issues without also seeing issues with the gut.

Constant Health™ provides a cutting-edge formula designed to be a strong foundation for a healthy intestinal and immune system. This formula is equally applicable for detoxification programs and daily health maintenance. As a comprehensive formula, with each ingredient at therapeutic amounts, Constant Health™ also offers an exceptional value to consumers.

I recommend Constant Health™ to all my patients, and I have replaced many similar health drinks I offered patients that are not as complete, affordable, or tasty.

This paper is an excellent primer on the science of cellular health, as well as the research that went into developing Constant Health™. I consider the following an important educational piece, one that will make clinicians' lives easier and enrich consumers' perspectives on their health.

Hugo Rodier, M.D.

Adjunct Faculty, Integrative Medicine & Nutrition

The University of Utah School of Medicine

Nutritional Apathy Feeds Larger Health Crisis

Sadly, poor nutrition is the norm today. Modern diets are excessively high in processed foods, refined sugars, bad fats, and empty calories. The obesity epidemic is not just growing, it is erupting.

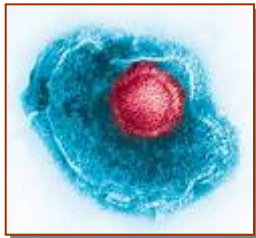
Worse, many people are deficient in the basic recommended daily allowance (RDA) levels of inexpensive, readily available vitamins and minerals. It is estimated that less than 1% of Americans achieve their daily RDA levels of all essential nutrients, even when eating a relatively good diet.

Meanwhile, there are no RDA thresholds set for many other important nutrients, like essential fatty acids. These important oils regularly garner press coverage for supporting everything from heart, joint, mood, skin, even immune system function.

Yet, none of this is really breaking news. We all know diet and nutrition affect health at a macro level, but millions of consumers still struggle mightily to find the “right diet” to maintain and improve their health.

Nutrition at the Cellular Level

So we understand what’s happening at a *macro* level, but what is less understood is the role cellular nutrition plays in good health at the *micro* level.



Many recent Nobel Prizes in science have been awarded to scientists studying cell-to-cell communication, in fields ranging from medicine and physiology to biology and chemistry.

Understanding how cells work is essential to protecting health. In nutritional science, the focus is on providing energy and information. This is accomplished through intake of nutrition sufficient to allow cells *to determine for themselves* what they need to function optimally.

When toxins or contaminants are ingested, they can cause cellular mutation in the intestine. Dietary fibers work to sweep toxins through and out of the intestine. When diets are deficient in fibers, toxic loads increase and the body must work harder to detoxify.

Toxins are defined as “harmful substances accumulating in the body.” Common toxins include: dangerous bacteria, pesticides, preservatives, over-the-counter and prescription drugs, hormones, and other industrial chemicals that make their way into our food and water supplies.

In the presence of toxins the body signals the intestine to rapidly replace its epithelial (surface) cells. This is to heal possible damage to the intestinal lining and to prevent toxins from being absorbed into the body.



Nutrients across cell membranes

Cell Membranes & Fatty Acids – Human cells are bound by a semi-permeable membrane composed of phospholipids. Phospholipids are primarily fatty acids coupled with a phosphate group and an organic molecule. A healthy cell membrane allows nutrients and essential molecules to pass through, while prohibiting harmful toxins from entering the cell. The cell membrane essentially allows cells to talk to one another.

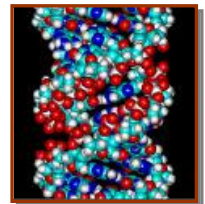
The type of fatty acid in cell membranes is directly correlated to the kind of fat consumed in the diet. Saturated fatty acids become incorporated into fluid cell membranes and pack in very tightly. Since saturated fatty acid chains have no gaps, they effectively prevent nutrients from entering cells.

Optimal cell membrane composition is achieved when the diet is comprised of equal parts saturated and unsaturated fatty acids. Unfortunately, many Westerners eat three times the recommended amount of saturated fats, and far too many disruptive hydrogenated and trans fats. This leads to oxidized fats and accompanying damage to cell membranes.

Cell Membrane Damage – With damage to its membrane, a cell's ability to regulate itself is at risk. Nutrient and electrolyte intake, excretion of wastes, communication with other cells, and reception of signals are then impinged upon.

Moreover, leaky cell membranes allow damaging toxins, especially fat-soluble toxins (such as pesticides) to cross both the cell's outer membrane and the inner nuclear membrane. When this happens, a cell's DNA and energy-producing mitochondria become vulnerable to free radicals and potentially dangerous mutations.

Cell Nucleus – Most of a cell's genetic material, DNA molecules organized into chromosomes, is contained in the cell nucleus. The nucleus is responsible for regulating gene expression (DNA and cell replication) and protecting gene integrity.



Cell Mitochondria – Mitochondria are the energy-producing workhorses of the cellular world. Depending on metabolic requirements, cells have anywhere from one large mitochondrion to thousands of smaller mitochondria. The central role of mitochondria is to produce ATP (adenosine triphosphate) from glucose for energy.

In addition to energy production, some mitochondrial functions are specific to certain cells. For example, the mitochondria in liver cells detoxify ammonia, a waste product

from protein metabolism. Mitochondria also play important roles in metabolic functions, such as cell-programmed suicide (apoptosis). This process ensures billions of cells damaged beyond repair die so new healthy cells can be generated. These damaged cells include those infected with viruses and cells suffering from DNA impairment.

Finally, metabolic disturbances can also negatively affect mitochondria. This occurs during glycation (sugar molecules bonding to protein or lipid molecules without the controlling action of an enzyme). This also occurs during periods of high glucose levels, when glucose molecules bind to proteins in the mitochondria of cells. Sugar-coated proteins, or glycoproteins, distort mitochondrial function. They also produce excessive free radicals, harming cells and creating a “metabolic memory” for a diabetic state, even after high glucose levels return to normal.¹

Fighting “Cellular TOIL”

Cell Nutritionals’ medical advisor, Hugo Rodier, a leading integrative M.D., stresses four essential things cells must manage to maintain health. They are: toxicity, oxidation, inflammation, and lack of mitochondrial energy conversion.

Typical Western diets lead to a condition of constant “cellular TOIL,” which means cells suffer from:

- **Toxicity** – Every cell in the body excretes waste endogenously (from within). If cells can’t eliminate this waste properly on their own, it stays in the body and becomes toxic. When exogenous (from the outside) toxins are ingested (i.e., hormones, pesticides, heavy metals, etc.), they add to toxic loads, which leads to cell communication problems. The more toxins absorbed and created metabolically, the harder cells must work to detoxify.
- **Oxidation** – Free radicals are reactive electrons produced by normal metabolic oxidation processes. However, excessive free radical formation can wreak havoc by stealing electrons from and destabilizing healthy atoms and cause oxidative stress that damages all cell components. Oxidized lipids, sugars, enzymes, and proteins then stop functioning properly and become harmful waste products in their oxidized states in cells.
- **Inflammation** – Damaged cell membranes become irritated and inflamed. This leads to a progressive shift in the type of cells that are present. This condition is characterized by a release of toxins and free radicals, which causes still more membrane inflammation. As a result, chronically inflamed cell membranes can't communicate properly. Without adequate cellular communication, hormones, neurotransmitters, and enzymes can't organize body functions properly. Vascular

¹ Warwick Medical School, June 2007

tissues then respond to harmful stimuli from damaged cells by becoming inflamed themselves, making inflammation a vicious cycle of escalation.

- **Lack of Mitochondrial Energy** – Most health problems are due to a breakdown in cellular communication, diminishing the energy cells need to do their job. Without proper nutrition, cells become sickly and body systems deprived. With over six billion cells being constantly regenerated, abundant nutrition is required to support cellular needs and energy production.

All four components of TOIL interplay with one another. Oxidative and inflammatory damage to the mitochondria in nerve tissues, neuropathy, is a key problem in diabetes. Oxidation of mitochondria is also quite prevalent in neurodegenerative diseases like Alzheimer's and Parkinson's diseases.

Refined diets are low in B complex vitamins like folic acid, which increases oxidation of our DNA and our cell membranes. Environmental toxins, which deplete our supply of B complex vitamins, act like free radicals by scavenging cell membranes in our mitochondrial and systemic cell membranes. The more we lack antioxidants, particularly glutathione, the more atherosclerotic lesions we develop on our arterial walls.

All diseases are part of the metabolic syndrome. Once we understand the importance of energy and information (E&I) and cell communication, we will expand its current narrow definition. TOIL can be addressed and largely corrected once a very simple solution is implemented.

The Science Behind Constant Health™

Creating and maintaining optimal health requires a comprehensive array of nutrients. It is paramount these nutrients be delivered in clinically significant amounts. This is especially important given the state of modern diets and increasingly harmful environmental exposure. Constant Health™ is Cell Nutritionals' cornerstone product, containing nearly four dozen natural ingredients carefully blended to provide:

- **Gentle Protein & Amino Acids** – Gentle, easy-to-digest rice protein with low-allergenic potential, suitable for vegetarian requirements.
- **Detoxifiers & Intestinal Builders** – A combination of amino acids that boost glutathione levels, along with fibers and other agents that help detoxify the body of heavy metals, chemicals, pesticides, and xenoestrogens. Intestinal soothing agents help support nerve endings in the stomach and intestinal cells.
- **Antioxidants & Phytonutrients** – A powerful suite of antioxidants and phytonutrients supporting healthy immune system function. All amounts are determined by clinical studies and peer-reviewed research.

- **Cellular Energy & Vital Nutrients** – A targeted suite of vitamins and minerals designed to boost cellular energy and support immune system and intestinal health.
- **Natural Sweeteners** – All-natural sweeteners and flavorings create an appealing formula while delivering balanced, concentrated nutrition.

How to Use Constant Health™

Constant Health™ yields approximately 37.86 grams of concentrated nutrition per serving (two scoops). Constant Health™ may be used at three different levels for optimal effect.

Level 1 - Daily Nutrition Booster (1 scoop): This level is for people who like to tailor their supplements with a variety of products. They are looking for a solid booster for healthy immune, intestinal, and detoxification function without adding a lot of additional products.

One scoop of Constant Health™ can serve as a between-meal energy booster, and offers substantial nutrition. At this level, one jar of Constant Health™ will last four weeks when taken daily.

Level 2- For Concentrated Daily Nutrition (2 scoops): This level is for people who take few or no other supplements and want one basic formula that covers critical health requirements. These folks are not necessarily interested in knowing the role n-acetyl-cysteine or calcium-d-glucarate play in detoxification. They simply appreciate a formula that supports their health in an easy, tasty way.

Two scoops of Constant Health™ is the standard serving size, and a jar will last for two weeks when taken daily at this level.

Level 3 - For Detoxification Protocols (4 scoops): At this level, you start with one to two scoops daily. Then move to two scoops twice daily as directed by a health care practitioner. This level is for people doing an intensive detoxification program, which typically ranges from one to four weeks. Dr. Rodier recommends a diet of only fresh vegetables, lean fish, chicken, eggs, and raw nuts for the first two weeks. He allows fresh fruit to be introduced to the diet during the second two weeks.

People who are sensitive may want to build up to higher levels slowly. A good plan would start with a half scoop and then move to two scoops over the course of a week. Normal detoxification symptoms may include mild headache, fatigue, and minor aches. It's the body's way of indicating the process of detoxification is underway. These symptoms typically disappear after a week or so.

At four scoops of Constant Health™ per day, one jar will last approximately one week.

Constant Health™ was designed as an ongoing foundation for a comprehensive nutritional program. It combines the benefits of four key components of nutrition: gentle protein and amino acids; detoxifiers and intestinal builders; antioxidants and phytonutrients; and nutrition for cellular energy and metabolic processes. (See Figure 1)

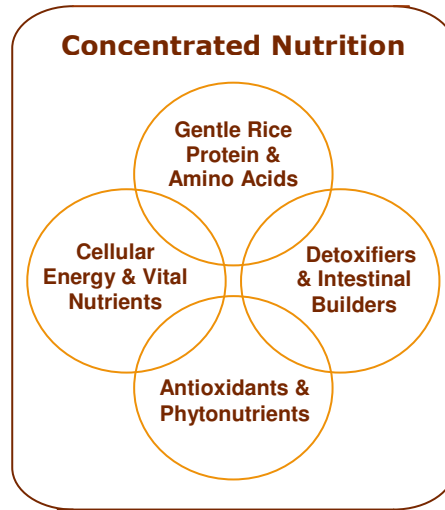


Figure 1 – Four Components of Constant Health™

Benefits of Rice Protein

Constant Health™ offers a complete rice protein, which digests easily and is one of the few hypoallergenic protein sources. It compares favorably to dairy-based whey, egg, and soy proteins. Rice protein is very gentle and is used quite successfully in populations with sensitive systems, like infants and the elderly.



Wide-scale epidemiological studies² support the use of plant proteins for optimizing health. Many people choose to also increase their intake of protein, and it's recommended that the elderly, in particular, add supplemental protein to their diets. Rice protein is, of course, perfect for those adopting a vegetarian program.

A Complete Protein

Protein is the main component of muscles, tendons, ligaments, organs, and glands. Every living cell and all body fluids, with the exception of bile and urine, contain protein.

Rice yields the highest quality protein of all grains and has a neutral taste that doesn't require masking agents for palatability.

² *The China Study*, T.C. & T. M.Campbell, 2005

Some wonder how rice, a carbohydrate, can yield a complete protein. The fact is all foods, including vegetables and fruits, contain amino acids, the building blocks of protein. Protein is isolated from the carbohydrate molecules in brown rice to produce rice protein. To be considered a complete protein, a protein must have all nine essential amino acids. Rice protein qualifies as a complete protein, and includes all non-essential amino acids as well.

Proteins & Amino Acids

Proteins are essential to all living cells. In fact, all the millions of different proteins in living organisms form by bonding only 20 building blocks called amino acids. As large molecules in the human body, proteins include vital agents like enzymes (catalysts for digestion), neurotransmitters (dopamine and acetylcholine), hormones (insulin and human growth hormone), and antibodies.



Growth, repair, and maintenance of cells are all dependent upon digestion of proteins into constituent amino acids in the gastrointestinal tract. These amino acids are then distributed to cells, which work to assemble proteins required for specific functions, like keratin for skin and collagen for tendons.

Organs with active metabolisms (liver, kidney, intestinal mucosa, and pancreas) have especially high requirements for protein. Stress to the body, such as intensive exercise, wounds, infections, surgery, even aging, also increases the body's protein requirements.

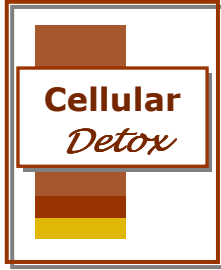
However, antibacterial agents and toxins can inhibit cells from synthesizing proteins that they need to function. Poor protein metabolism can also cause toxic levels of waste ammonia, putting undue stress on the kidneys and liver.

Many popular diets subscribe to the theory of "more protein" and "fewer carbohydrates." However, most diets pay little attention to the *quality* of the protein being ingested.

Animal proteins are much more difficult to digest than vegetable proteins. Ground-breaking epidemiological research discussed in the book, *The China Study*, by T. Colin Campbell, professor of Nutritional Sciences at Cornell University, also links animal protein diets with disease. Conversely, plant-based proteins protect and enhance health.

Detoxifiers & Intestinal Flora Builders

Poor diet and environmental pollution can cause malabsorption problems, build-up of toxins, and oxidized stress. If there is excessive free radical formation and accumulation of toxins, inflammation in cells and tissues usually occurs.



Since most people consume too many toxic foods (trans fats and simple sugars), the stage is set for significant cellular dysfunction and a real need for cellular detoxification.

The body's natural detoxification process removes toxic substances, including foreign chemicals, free radicals, and oxidized fats and proteins. Detoxification is one of the major functions of the liver and lower gastrointestinal tract.

However, most people need additional nutritional support to aid the liver and gastrointestinal system in removing excessive toxic compounds accumulating in the body. This is particularly true if the digestive system is not functioning optimally.

Gastro-protective and digestive agents can restore the balance in the gastrointestinal system, thus aiding the absorption of nutrients and reducing the build-up of damaging toxins and oxidized molecules.

Boosting Glutathione Production to Aid Detoxification

Glutathione is the most powerful antioxidant produced in the body. Glutathione is synthesized in the liver from the amino acids cysteine, glutamic acid, and glycine.

Enhancing immune system response, improving intestinal detoxification functions, and preventing damage from oxidative stress all create special demand for cellular glutathione.

In cells, glutathione inhibits the formation of and protects against damage from free radicals. As a detoxifier of heavy metals and drugs, glutathione is also crucial to liver health.

Glutathione Boosters

- Glycine
- Glutamine
- N-Acetyl Cysteine
- Curcumin
- Milk Thistle
- Selenium

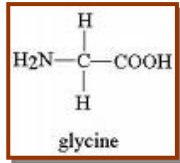
However, most experts believe the body does not convert glutathione supplements into glutathione inside cells. Instead, the body must produce glutathione naturally, and that process is limited by the levels of necessary precursor amino acids available in the body.

Higher blood levels of glutathione are associated with better health, especially in elderly people. Recognition of this link between glutathione and good health has led to major commercial efforts promoting the use of glutathione supplements.

Supplemental compounds can boost glutathione levels, including the amino acids glycine and glutamine. N-acetyl-cysteine (NAC) is derived from cysteine and is quickly converted to glutathione once it enters the body. Many studies have proven NAC boosts intracellular glutathione levels. Additionally, curcumin (curry spice), milk thistle (known for liver protection), and selenium are also considered glutathione boosters.

L-Glycine

2 grams per serving



Glycine is one of the three amino acids that form glutathione.³ In addition to enabling glutathione production, glycine directly nourishes key detoxification organs, like the liver, kidneys, and intestines.⁴

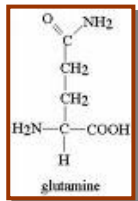
Glycine is essential not only for elimination, but also for a normally-functioning digestive system. It supports healthy gastric secretions (regulating bile acid synthesis used to digest fats) and also reinforces healthy gastric mucosa. Glycine is further required for the metabolism of proteins, amino acids, hemoglobin, and glucose. It is found abundantly in prostatic fluid and is used to construct normal DNA and RNA strands, the genetic material needed for proper cellular function and formation.⁵

Glycine is necessary for central nervous system function, may improve memory and other cognitive functions,⁶ and converts to the neurotransmitter, serine, which helps the body synthesize cysteine, the precursor to glutathione.

Glycine is perhaps best known for its role in helping create muscle tissue and preventing the breakdown of muscle (by boosting body levels of creatine).⁷ In this way glycine enhances energy use, increases endurance, and aids in essential muscle tissue repair.

L-Glutamine

2 grams per serving



Glutamine is involved in more metabolic processes than any other amino acid, and is used by nearly every cell in the body.⁸

Glutamine is one of the amino acids that helps form the antioxidant glutathione and works to remove toxins from the body. It is essential for protecting the liver and maintaining intestinal function, cellular hydration, and protein metabolism.⁹

Glutamine is the primary source of energy for the various cells of the immune system, including T cells and macrophages. Under stress, the body's need for glutamine outpaces the body's ability to synthesize it. Without sufficient glutamine, the immune system cells become malnourished.

³ J. Current Opinion Clinical Nutrition Metab Care 2003;6:229.

⁴ Alcohol Clin Exp Res. 2005 Nov;29(11 Suppl):162S-5S.

⁵ J Pediatr 1996;129:449-52.

⁶ J Clin Psychopharmacol. 1999;19:506-12.

⁷ J Pediatr 1996;129:449-52.

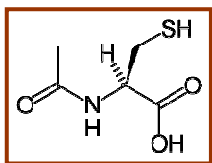
⁸ Minerva Gastroenterol Dietol 1996 Mar;42(1):17-26.

⁹ Wien Klin Wochenschr. 1996;108(21):669-76.

Glutamine plays a major role in protecting the integrity of the gastrointestinal tract by increasing mucosal and villi (tiny, finger-like projections) health in the intestine. It also helps maintain normal blood sugar by converting to glucose when more energy is needed, and serves particularly well as a source of fuel for cells lining the intestines.

N-Acetyl-Cysteine

300mg per serving



N-acetyl-Cysteine (NAC) is a derivative of the amino acid L-cysteine, a major precursor in the formation of the antioxidant glutathione.¹⁰ NAC is more stable than L-cysteine and is quickly metabolized into glutathione once it enters the body.

NAC is a potent cell detoxifier, as well as helping to strengthen cell membranes. NAC strengthens the protective lining of the stomach and intestines, and has proven liver-protecting qualities.

Calcium D-glucarate

300mg per serving



Calcium D-glucarate, similar to indole-3-carbinol, is a natural substance found in many fruits and particularly in cruciferous vegetables. As a form of glucuric acid, this phytochemical supports elimination of toxins, pollutants, and excess hormones from the body.¹¹ It also promotes a clean internal environment for optimum metabolism.

Calcium D-glucarate helps to deactivate or inhibit beta-glucuronidase, an enzyme found in certain bacteria in the gut. When not properly regulated, B-glucuronidase allows potentially damaging toxins and excess hormones to be reabsorbed into the body instead of being excreted.

Detoxifying the body reduces the load on the liver and immune system, so that these systems can focus on repair and generation of healthy cells. Some body-building reports also indicate calcium D-glucarate can improve physiques.

Milk Thistle (standardized to 80% silymarin)

300mg per serving



The active component of milk thistle is silymarin, a unique type of flavonoid with antioxidant ability. Silymarin has a stimulatory effect on key cells of the immune system,¹² and offers substantial protection for cell membranes against oxidative stress from environmental contaminants.

¹⁰ J. Skin and Allergy News. August 2006, page 36.

¹¹ Biochem Med Metab Biol. 1990; 43:83-92.

¹² J Cancer Res Clin Oncol. Epub 2007 Apr 14.

Silymarin has been shown to protect the liver from a variety of harmful substances and free radical damage. It prevents toxins from penetrating the interior of liver cells, while promoting the growth of healthy new cells.^{13,14}

Dietary Fiber - Soluble & Insoluble Agents

Dietary fibers are the indigestible portion of plant foods that sweep through the digestive system, keeping the gastrointestinal tract clean.

Soluble fibers undergo metabolic processing via fermentation in the large intestine and colon, and serve a prebiotic function that encourages growth and activity of beneficial gut flora, or probiotics, bifidobacteria and lactobacilli.¹⁵ Metabolism of soluble fibers by bacteria in the colon yields short-chain fatty acids, which increase absorption of minerals¹⁶ and protect the mucosal lining of the intestine.

Because soluble fiber takes longer to digest, it helps regulate blood sugar levels. Short-chain fatty acids from soluble fibers also help regulate blood glucose levels by acting on pancreatic insulin release and liver control of glycogen breakdown.

Insoluble fibers also shorten transit time through the intestinal tract and support elimination of toxins and cholesterol-producing substances from the body.¹⁷

Guar Gum

1 g per serving



Guar gum is a soluble fiber made from the seeds of the guar plant and is used both to increase satiety and support bulk in stools, easing and promoting regular elimination.

Guar gum is able to absorb toxic substances, like unhealthy bacteria, to support intestinal health. Animal studies have shown guar gum to improve calcium absorption in the small intestine and improve dietary glucose tolerance. As a fiber, guar gum also offers low allergy potential.

Apple Pectin

500mg per serving

Pectins, a soluble fiber, are polysaccharides found in the cell walls of plants. Extracts of fruit pectins are typically associated with the making of jams and jellies. In the large

¹³ Eur J Pharmacol. 2007 Apr 10;560(2-3):110-6. Epub 2007 Jan 19.

¹⁴ J. Molecular Carcinogenesis. 1999;26:321.

¹⁵ Am J Clin Nutr. 2005;82 (2): 471-6.

¹⁶ J Nutr. 2003;133 (1): 1-4.

¹⁷ J Nutr. 1994; 124:78-83.

intestine and colon, microorganisms digest pectin and liberate short-chain fatty acids that support intestinal health.



Pectin delays stomach emptying, helping prevent blood sugar swings and is associated with healthy cholesterol levels by increasing viscosity of the intestinal tract, leading to reduced absorption of cholesterol from bile or food.

Pectins are also considered important in supporting excretion of heavy metals and endocrine-disrupting chemicals from the body.

Apple Fiber

2 g per serving

A mostly insoluble fiber that adds bulk and softens stools, apple fiber is good for people who are sensitive to wheat and oat bran. Apple fiber, which includes some apple pectin, also helps rid the body of heavy metals, promotes regularity, and tones the gastrointestinal tract.

Cellulose

1 g per serving



Cellulose, an insoluble fiber, constitutes about one-third of all plant matter, making it the most common of polysaccharides. Cellulose is used in nutritional formulas as a bulking and colon-cleansing agent, with positive associations with healthy cholesterol levels.

Antioxidants & Phytonutrients

All life requires oxygen to exist. Oxygen is also a highly reactive molecule. Free radicals are reactive electrons produced by normal oxidation processes. Oxidative stress on cells occurs when there is an imbalance between production of reactive oxygen species free radicals and the body's ability to detoxify it.

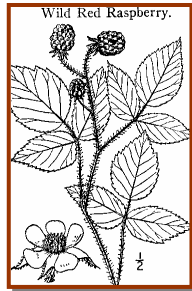
Under healthy conditions, balance is preserved by enzymes that provide constant inputs of metabolic energy and antioxidants to reduce and repair cell damage caused by free radicals. If there is excessive free radical formation, and the body's network of antioxidants is depleted, metabolic oxidation processes become imbalanced and toxic.

The presence of dangerous amounts of free radicals can alter the way in which cells code genetic material. They cause toxic effects that damage all components of the cell, including mitochondria. If the mitochondrion suffers too much damage, the cell will die.

Phytonutrients are extremely beneficial plant-derived food compounds. In contrast with nutrients, they are not required for normal metabolic function. Still, they are potent antioxidants that reduce, neutralize, and prevent damage to cells from free radicals.

Red Raspberry Seeds

1 gram per serving



Red raspberry seeds are rich in anthocyanins, natural antioxidant compounds, and are good dietary sources of tocopherols and carotenoids. Berry anthocyanins repair and protect cell integrity and are beneficial in reducing age-associated oxidative stress.¹⁸

Red raspberries also provide a complete complex of ellagitannins, a proven dietary source for creating ellagic acid in the body. As with glutathione, supplemental ellagic acid is not considered effective. Since the body requires the precursor ellagitannins to create health-promoting ellagic acid. Ellagitannins have been studied for their ability to slow the growth of abnormal cells, promote wound healing, and support liver health.

One gram of red raspberry seeds yields approximately 40mg of ellagitannins, which is equivalent to what is found in 1 cup of fresh red raspberries. It also contains additional beneficial fiber for healthy gastrointestinal function.

Slippery Elm (inner bark rind)

500mg per serving



Slippery elm bark is rich in calcium and bioflavonoids. It is typically used to soothe mucous membranes of the bowels, stomach and urinary tract.¹⁹ Slippery elm is also considered valuable in supporting the body's adrenal glands and upper respiratory system.

Additionally, slippery elm is used to draw out and assist the body in expelling toxins.

Boswellia Serrata (standardized to 55% boswellic acids)

500mg per serving



Boswellia serrata (Frankincense) is a large tree native to India and is considered a guggul, a sticky gum resin from the sap of a tree. Boswellia has been used in Indian Ayurvedic medicine for centuries to provide joint and tissue comfort, to reduce swelling and inflammation, and for digestive relief.

¹⁸ J. Agric. Food Chem. 2005; 53 (3), 566 -573.

¹⁹ J. Alimentary Pharmacology Therapy 2002;16:197.

Boswellic acids, the active ingredients in the resin, have been found to have significant gastro-protective and soothing effects.^{20,21}

Turmeric (curcuma longa standardized to 95% curcuminoids)

500mg per serving



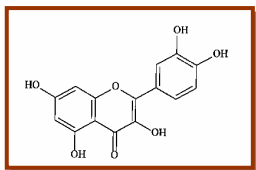
The bright orange curcuminoids contained in turmeric are powerful bioflavonoids. They have a wide range of antioxidant activities and have been shown to increase glutathione in the body.²²

Curcuminoids are also associated with inhibiting eicosanoids, which are involved with the body's inflammation process. Turmeric is used widely in India and Indonesia to promote joint and tissue comfort and as an aid in digestion.

Curcumin has been shown in clinical studies to provide significant soothing effects in the stomach and small intestine. It has also demonstrated protective activity in the stomach and colon.²³

Quercetin

500mg per serving



Quercetin is one of the most potent bioflavonoids used by plants to protect against UV radiation and microbes. Quercetin is the most active of the flavonoids. Quercetin has powerful cell protecting properties²⁴ and stabilizes cell membranes so they are less reactive to allergens and toxins by inhibiting the manufacture and release of histamine. Bioflavonoids are, in fact, considered "nature's biological response modifiers."

While bioflavonoids, like quercetin, are poorly absorbed by the body, they stimulate the body to produce uric acid to excrete them, which helps the body to eliminate other unwanted compounds.

Quercetin inhibits lipid peroxidation and increases protective mucus production in the gastrointestinal tract.²⁵ Quercetin is also thought to help preserve vitamin C in the body and support the health of fragile capillaries.

²⁰ DNA Cell Biol. 2005 Apr;24(4):244-55

²¹ Inflammopharmacology. 2004;12(2):131-52

²² J. Skin and Allergy News, May 2005, page 20.

²³ Biosci Biotechnol Biochem. 2000; 64:503-509.

²⁴ Clin Cancer Res. 1996; 2:659-668.

²⁵ Z Naturforsch[C]. 1998; 53:82-88.

Grape Seed Extract (95% proanthocyanidins)

200mg per serving



The main active components of grape seed extract are oligomeric proanthocyanidins (OPCs), another potent bioflavonoid. OPCs are water soluble, highly bioavailable, and have uniquely powerful antioxidant capabilities.²⁶ For example, they are able to cross the challenging blood-brain barrier and provide antioxidant protection to both the brain and the central nervous system.

OPCs maintain cell integrity, enhance the growth and viability of normal cells,²⁷ promote vascular health, and protect the liver and other organs from toxicity.²⁸

Grape seed extract has been shown to have a positive effect on metabolism of food.²⁹ It can also help support the body in maintaining balanced blood sugar³⁰ and healthy cholesterol levels.

Ginger Root (root powder with 5% standardized gingerols)

100mg per serving



Ginger is used in folk medicine throughout the world to aid in digestion and is thought to fight unfriendly intestinal bacteria without impairing friendly bacteria. Gingerols are associated with inhibiting prostaglandin and leukotrine formation, which influence blood flow and inflammation.

Ginger has gastro-protective qualities³¹ and is a digestive stimulant. It has been shown to have a positive influence on the activity of digestive enzymes³² and promote production of saliva, digestive juices, and bile. Ginger enhances blood circulation and is considered supportive of healthy cholesterol levels.

Vitamin A (100% natural beta-carotene)

5000IU per serving (100% RDA)



Vitamin A is a fat-soluble antioxidant, essential for overall health. Beta-carotene is one of the most important carotenoids in nature, and it is more efficiently converted by the liver into vitamin A (retinol) compared with other carotenoids.

²⁶ J Clin Pharm Ther. 1998 Oct;23(5):385-9.

²⁷ Carcinogenesis. 1999 Sep;20(9):1737-45.

²⁸ Ann N Y Acad Sci. 2002 May;957:260-70.

²⁹ J. Skin and Allergy News June 2006, page 24.)

³⁰ J. Nature. 2006;444:1009.

³¹ Am J Chin Med. 1989;17(1-2):51-6.

³² Nahrung. 2003 Dec;47(6):408-12

Beta-carotene enhances intercellular communication and normal cell division, while promoting vision, eye, skin, and mucous membrane health. It also enhances immune response against environmental toxins and protects cells from damage caused by damaging free radicals.³³

The evidence is overwhelming that a diet rich in beta-carotene may reduce the risk of certain types of cancer.³⁴

Vitamin C (calcium ascorbate and ascorbic acid)

753mg per serving (1255% RDA)

Vitamin C may be the most important water-soluble antioxidant in the body. It protects the body during times of stress and aids in the absorption of other nutrients. It is also essential to maintaining normal immune function.^{35,36}

Vitamin C works synergistically with lysine and proline to synthesize collagen and elastin, which support vascular, skin, muscle, and connective tissue health. It also plays critical roles in protecting the eyes, kidneys, and nerves. Vitamin C has detoxified histamine in test tubes, which is a product of stress and immune system insult.

Vitamin C protects cells, plasma lipids, DNA, proteins and even other antioxidants from oxidative damage. In essence, it reduces oxidized vitamin E in cell membranes.³⁷ Vitamin C also increases the synthesis of natural antiviral and antibody substances produced by the body, and it stimulates the activity of other key immune cells.

Vitamin E (as mixed tocopherols and tocotrienols)

100IU per serving (333% RDA)



Vitamin E is a potent lipid-soluble dietary antioxidant with immune enhancing properties.³⁸

Vitamin E (alpha-tocopherol) protects cell membranes from deterioration by free radicals.³⁹ In particular, it has been shown to decrease oxidative stress on lipid cells,⁴⁰ and improve glucose disposal.⁴¹ This leads to improved oxygen utilization and balanced blood sugar, while promoting cardiovascular health.⁴²

³³ J Infect Dis. 2006 Nov 1;194(9):1217-25

³⁴ J Natl Cancer Institute. 1999; 91:547-56

³⁵ Psychopharmacology. 2002;37:261-7.

³⁶ Int J Sports Med. 1996 Jul;17(5):379-83

³⁷ Free Radic Biol Med. 1999 Nov;27(9-10):1064-79.

³⁸ JAMA. 1997; 277:1380-1386.

³⁹ FASEB J. 1999; 13:1145-1155.

⁴⁰ Annu Rev Nutr 2005;25:151-74.

⁴¹ J Investig Med. 2004 Jan;52(1):24-32.

⁴² Diabetes Res Clin Pract. 1999; 45:169-182.

Effective absorption of vitamin E by the gastrointestinal tract is critical to central nervous system health and coordination.

Vitamin D3 (as cholecalciferol)

1000IU per serving (250% RDA)

Vitamin D is a fat-soluble vitamin required for absorption and utilization of important nutrients by the intestinal tract. It is necessary for growth, maintains healthy bone density, and protects against muscle weakness.

Recent research indicates a true need for increasing the daily requirement for Vitamin D from 400 IU daily to 1000-2000 IU daily, since blood serum levels typically show critically low vitamin D levels. Consumers are becoming increasingly aware that vitamin D3 or cholecalciferol is the preferred and more bioavailable form. Vitamin D3 is up to ten times more potent than D2 or ergocalciferol.

The active form of vitamin D is actually a steroid hormone found to enhance how immune cells communicate. Vitamin D has extensive immune-enhancing, antioxidant, and cell-protecting activities that are yet to be fully understood.⁴³

Selenium (as selenomethionine)

70mcg per serving



Selenium is a vital antioxidant that protects the body from free radical damage in many ways and speeds up the metabolism of fatty acids.

It is incorporated into proteins to make selenoproteins, important antioxidant enzymes that protect cells from cellular damage.⁴⁴ One selenoprotein is also the body's most powerful antioxidant, glutathione. Without selenium, the body cannot produce glutathione.

Another crucial selenoprotein is thioredoxin reductase, which maintains the antioxidant function of vitamin C (ascorbic acid) by catalyzing its regeneration from its oxidized form.⁴⁵ Selenium also acts synergistically with vitamin E, each improving the efficiency of the other. They work together to aid in the production of antibodies and to help maintain a healthy heart and liver.

The FDA supports limited claims for selenium as protection against cancer.

⁴³ Nutr Res. 2000; 20:91-102.

⁴⁴ J Nutr. 2000;130:1653

⁴⁵ Biochem J. 2000 Feb 15;346 Pt 1:1-8.

Zinc (as methionate)

15mg per serving

Zinc is an essential nutrient needed to maintain the integrity of cell membranes. It has potent antioxidant properties and is required for a number of immune functions, including boosting of thymus gland function. Zinc also increases the absorption of vitamin A and is needed to maintain the proper concentration of vitamin E in the blood.

Zinc also functions as a catalyst for many essential enzymes. This includes the antioxidant enzyme super-oxide dismutase (SOD), which supports cellular health by protecting cytoplasm and mitochondria from the body's most common and aggressive free radical, super-oxide.⁴⁶

Cellular Energy Requires Vitamin Support

Cells need nutrients to create energy. Dysfunction of nutrient processing leads to a "metabolic syndrome" with breakdown in cellular communication and diminished energy production. Without adequate cellular communication, hormones, neurotransmitters and enzymes cannot organize body functions or cell metabolism properly.

B Vitamins



The B vitamins are essential for cell metabolism, and they support the body's enzymes in energy production.

B vitamins help maintain a healthy gastrointestinal tract, playing important roles in the metabolism of carbohydrates and fats into energy. They also combat the symptoms and causes of stress, which sap energy.

B vitamins are water soluble and must be replenished daily. Ideally, B vitamins should be taken together in complex.

Vitamin B1 (thiamine)

10 mg per serving

Thiamine, or B1, plays a key role in intracellular glucose metabolism.⁴⁷ The body cannot effectively convert carbohydrates into energy without it.⁴⁸ Thiamine is also involved in the metabolism of branched-chain amino acids (proteins), and is important to the growth and protection of cells.⁴⁹

⁴⁶ J Toxicol Clin Toxicol. 1999;37:279-92.

⁴⁷ Diabetologia. 1996; 39:1263-1268.

⁴⁸ Mayo Clin Proc. 1999; 74:259-263.

⁴⁹ Ann Vasc Surg. 2000; 14:37-43.

Thiamine is crucial to normal neural activity and has positive effects on the health of intestinal muscles and mucous membranes. It also aids proper digestion by contributing to the production of hydrochloric acid.

Vitamin B2 (riboflavin)

10 mg per serving

The body requires riboflavin, or vitamin B2, to ensure cells can reproduce correctly and supply the body with fuel. Riboflavin acts as an important facilitator and protector for a number of other nutrients and enzymes, without which the body could not convert fats, carbohydrates, and proteins into cellular energy.

Riboflavin also acts a precursor and cofactor with other antioxidants in the production of glutathione.⁵⁰ In this way, it protects cells from mitochondrial damage⁵¹ and helps regenerate vitamin E in the body. Along with vitamin A, riboflavin supports healthy mucous membranes in the digestive system.

Vitamin B3 (niacin)

20 mg per serving

Niacin, or vitamin B3, combines with other B vitamins to release energy from carbohydrates to the cells and regulate glucose in the body. Niacin is also indispensable to fat and protein metabolism. It is perhaps best known for its role in inhibiting cholesterol synthesis and promoting heart health.

Niacin also aids in the production of hydrochloric acid and other digestive juices, and is required for the metabolism of fats.⁵²

Vitamin B5 (pantothenic acid)

10 mg per serving

Pantothenic acid, or B5, is involved in an array of biological functions related to the production of energy, and is necessary for normal functioning of the gastrointestinal tract.

Pantothenic acid is an essential precursor of coenzyme A, a vital body chemical involved in many necessary metabolic functions, including the production of glucose from amino acids.⁵³ It also contributes to the formation of acetylcholine in the intestines, which enhances peristalsis (rhythmic intestinal motion) and facilitates healthy elimination.

⁵⁰ Nutr Rev. 1998; 51:149-150.

⁵¹ AIDS Rev. 2003 Jan-Mar;5(1):36-43.

⁵² Atherosclerosis. 2007 Jun;192(2):432-7. Epub 2007 Jan 19

⁵³ Free Rad Biol Med. 1996; 20:793-800.

Pantothenic acid is also needed to make adrenal hormones and in the production of neurotransmitters, and works to protect the nervous system from stress.

Vitamin B6 (as pyridoxine)

10 mg per serving

Vitamin B6 is necessary for the production of hydrochloric acid, normal red blood cells, and the absorption of fats and proteins.

Vitamin B6 is also needed for the synthesis of the nucleic acids RNA and DNA, which are necessary for normal cellular growth, and aids in the absorption of iron, vitamin B12, and a host of other nutrients.⁵⁴ B6 combines with folic acid and B12 to normalize homocysteine metabolism and maintain cardiovascular and circulatory health.⁵⁵

B6 is also required by the nervous system for the synthesis of mood-regulating neurotransmitters, such as serotonin. Optimal levels of riboflavin (B2), vitamin C, magnesium, and selenium improve B6 absorption.

Vitamin B12 (methylcobalamin)

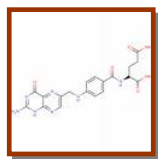
10 mg per serving

Vitamin B12 is required for proper digestion, absorption of nutrients, synthesis of protein, and metabolism of carbohydrates and fats.⁵⁶ It also works with folate and vitamin B6 (pyridoxine) to protect the heart by removing homocysteine from the blood.

Methylcobalamin (B12) is a cofactor in the creation of methionine, a precursor of S-adenosylmethionine (SAME). SAME is involved in the synthesis of myelin basic protein and important neurotransmitters. Myelin is a protective layer that coats nerve cells and aids in cellular communication.

Folate

400mcg per serving



Folate is needed for protein metabolism and energy production,⁵⁷ and is crucial to the good health of every cell in the body.⁵⁸ Folate functions as an active coenzyme in DNA and RNA synthesis, and is needed to regulate cell formation and maintain cell integrity.⁵⁹

⁵⁴ Nippon Jinzo Gakkai Shi. 1993 Aug;35(8):975-80.

⁵⁵ J Vasc Surg. 1994 Dec;20(6):933-40.

⁵⁶ Baillieres Clin Haematol 8: 441-459.

⁵⁷ La Revue du praticien 43 (11): 1358-63.

⁵⁸ Semin onco. (5 Suppl 18): S18-30-S18-39.

⁵⁹ Gastroenterology (USA), 1997, 112/1 (29-32).

Biotin

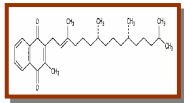
300mcg per serving

Biotin, or vitamin B7, is essential to cell growth. It is necessary to the production of essential fatty acids and the conversion of carbohydrates and fats into energy.

Biotin stimulates enzymes that regulate carbohydrate metabolism in the liver, and enhances glucose uptake in muscle cells⁶⁰ to maintain steady blood sugar levels.⁶¹

Vitamin K

40mcg per serving



Vitamin K is crucial in the absorption of other important nutrients, in particular calcium. Vitamin K also aids in converting glucose into glycogen for storage in the liver, and thus promotes healthy liver function and regulation of blood sugar⁶², while protecting the inner linings of the organs.⁶³

Cellular Energy Requires Mineral Support

Boron

1.5mg per serving

Boron contributes to the efficiency and absorption of other vital nutrients, including calcium, vitamin D, copper, magnesium, phosphorus, calcium and magnesium.⁶⁴

Boron is known for building bone and muscle, and also for boosting brain activity. It is also considered important for immune function and energy use in the body.

Calcium (from carbonate and d-glucarate)

300mg per serving



Calcium, the most abundant mineral in the human body, is crucial to building and maintaining strong bones, teeth, and connective tissue.

Calcium absorption from the small intestine and its excretion from the kidneys are carefully regulated to ensure precise concentrations of calcium in the blood plasma. High or low calcium levels can both cause problems in the body.

Calcium also promotes healthy digestion through the production of hormones and enzymes. Calcium increases fat breakdown, and also discourages the accumulation of

⁶⁰ Nippon Rinsho. 1999;57:2261-2269.

⁶¹ U.S. Pharmacist (Nov 2006). 31 (11).

⁶² Int J Vitam Nutr Res. 1999; 69:27-31.

⁶³ Biochim Biophys Acta 1157:313-17.

⁶⁴ Environ Health Perspect 1994;102(suppl 7):59-63;79-82.

excess dietary fat within the digestive tract^{65,66} thus protecting the colon from oxidative damage.⁶⁷

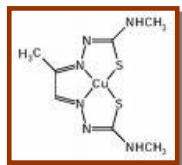
Chromium (as polynicotinate)

400mcg per serving

Chromium is vital to the synthesis of cholesterol, fats, and protein, and is needed for energy production. It is particularly important in the metabolism of glucose,⁶⁸ and proper insulin utilization.⁶⁹ Some claim chromium may increase lean body mass by boosting protein metabolism.

Copper (as gluconate)

2mg per serving



Copper is found primarily in the bloodstream as a cofactor in various enzymes, energy production, insulin function, and the breakdown of fats. The body has to have both copper and zinc to produce the powerful antioxidant, Superoxide Dismutase (SOD).⁷⁰

Copper protects the heart, bones, and joints by keeping collagen and elastin fibers healthy. Copper also helps supply the heart with healthy, oxygenated blood and protects nerve fibers and aids in nerve signal transmission in the brain.

Iodine (as natural kelp source)

150mcg per serving

Iodine's major role is as precursor to the formation of thyroid hormones, which are involved in protein synthesis and control many enzymatic processes.⁷¹

Iodine is required for proper mental and physical development, impacts cell respiration, and supports muscle and nerve function. Iodine also contributes to growth and repair of tissues and impacts the health of skin, teeth, hair, and nails.

Magnesium (as aspartate)

300mg per serving

Magnesium is critical in energy metabolism and glucose utilization.⁷² It is required by more than 300 enzymatic, cellular, and hormonal energy processes in the body.

⁶⁵ Int J Obes 2005;29:292-301.

⁶⁶ J Clin Nutr 2003;77:281-7.

⁶⁷ N Engl J Med 1999;340:101-7.

⁶⁸ Metabolism. 1987 Apr;36(4):351-5

⁶⁹ Biol Trace Elem Res 2004;Summer;99(1-3):1-16.

⁷⁰ Metabolism. 1997;46:1380-3.

⁷¹ J Nutr. 2000; 130:493S-495S.

⁷² Diabetologia. 1990, 33/9 (511-514)

Magnesium is involved in activating amino acids for use by cells and in the synthesis and breakdown of DNA. It also plays a significant role in the metabolism of other minerals,⁷³ and is important in maintaining intracellular electrolyte balance. It also facilitates neurotransmission, nervous system and heart health.

High fat diets may interfere with magnesium absorption. Then excess fats that cannot be absorbed in the small intestine remain in the gut and bind with magnesium to form insoluble soaps. These soaps cannot pass through the intestinal wall.

Manganese (as gluconate)

2mg per serving

Manganese is concentrated in the liver, brain, pancreas, and skeleton. It acts as a catalyst and cofactor in many enzymatic processes needed for protein and fat metabolism, and aids in the regulation of blood sugar and storage of glycogen in the liver.⁷⁴

Manganese is an integral part of the antioxidant enzyme Superoxide Dismutase (SOD) and the synthesis of glycoproteins needed to protect mitochondria, the principal energy source for all cellular functions.

Manganese is needed for the utilization of vitamin B1 (thiamine) and vitamin E. It also works with B-complex vitamins to protect the body from stress.

**SOD
Boosters**

- Copper
- Manganese
- Zinc
- Vitamin C

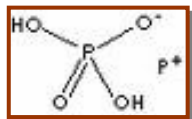
Molybdenum (as amino acid chelate)

75mcg per serving

Molybdenum is a trace mineral found in all tissues of the body, particularly the bones, teeth, kidney, and liver. It is important because it helps the body make several enzymes which aid in protein synthesis and promote normal cell function.

Phosphorus (as potassium phosphate)

200mg per serving



In plants, phosphorus is necessary for photosynthesis, and is found in every human cell. Phosphorus forms part of the structural framework of DNA and RNA. More than 80% of phosphorus is stored in the bones and teeth. The remainder resides in phospholipids in cell membranes and nucleic acids. It is involved in cellular energy production via adenosine triphosphate (ATP).

⁷³ Clin Calcium. 2004 Dec;14(12):96-9

⁷⁴ Neurotoxicol. 1999; 20:213-223.

Working with vitamin B, phosphorus is involved in the metabolism of fats and carbohydrates and in the repair and maintenance of cells. It is also necessary for a regular heartbeat, contraction of muscles in the body, healthy kidney function, and conduction of nerve impulses within the nervous system.

Potassium (as phosphate)

300mg per serving

Potassium is an essential macro-mineral and electrolyte vital to keeping cells alive. It aids in the production of cellular energy, and is key to maintaining fluid and electrolyte balance in the body.⁷⁵ It also regulates the transfer of nutrients through cell membranes. Potassium is antagonistic with sodium, which means an imbalance in one creates an imbalance in the other, and normally potassium should predominate in cells.

Potassium is important to vascular health, normal muscle contractions, kidney function, and stomach secretions. It is also essential to healthy nerve transmission.

It is thought to alleviate allergic responses, promote healing, and address fatigue.

Vanadium (as vanadyl sulfate)

3mg per serving

Vanadium is needed for cellular metabolism and is an essential component of many enzymes. It plays a role in growth and reproduction, and the formation of bones and teeth. Vanadium also has a balancing effect on blood sugar levels and inhibits cholesterol synthesis.^{76,77}

For more product and company information, as well as scientific studies and references for this white paper, please visit us at : cellnutritionals.com

⁷⁵ Nutr Rev (USA) Nov 1994, 52 (11) p367-75

⁷⁶ Diabetics. 1996;45:659-66.

⁷⁷ J Clin Invest. 1995;95:2501-9.

Appendix A – Constant Health™ Supplement Facts Panel

Supplement Facts				
Serving Size 2 Scoops				
Servings Per Container 14				
Amount Per Serving		% Daily Value	Amount Per Serving	% Daily Value
Calories	170		Copper	2mg 100%
Calories from Fat	20		Manganese	2mg 100%
Total Fat	2.5g	4%*	Chromium	400mcg 333%
Cholesterol	15mg	5%*	Molybdenum	75mcg 100%
Total Carbohydrate	9g	3%*	Sodium	30mg 1%*
Dietary Fiber	5g	20%*	Potassium	400mg 11%
Sugars	4g	†	Apple Fiber	2000mg †
Protein	15g	30%*	Apple Pectin	500mg †
Vitamin A	5000IU	100%	Bioperine	20mg †
Vitamin C	1000mg	1,666%	Boron	1.5mg †
Vitamin D3	1000IU	250%	Boswellia Serrata	500mg †
Vitamin E	100IU	333%	Calcium d-Glucarate	300mg †
Vitamin K	40mcg	50%	Cellulose	1000mg †
Thiamine	10mg	667%	Ginger Root Powder	100mg †
Riboflavin	10mg	588%	Grapeseed Extract	200mg †
Niacin	20mg	100%	Guar Gum	1000mg †
Vitamin B6	10mg	500%	L-Glutamine	2000mg †
Folate	400mcg	100%	L-Glycine	2000mg †
Vitamin B12	1000mcg	16667%	Lo Han Guo	1.5mg †
Biotin	300mcg	100%	Milk Thistle	300mg †
Pantothenic acid	10mg	100%	N-Acetyl-Cysteine	300mg †
Calcium	300mg	30%	Quercetin	500mg †
Phosphorus	200mg	20%	Red Raspberry Seeds	1000mg †
Iodine	150mcg	100%	Slippery Elm	500mg †
Magnesium	300mg	75%	Turmeric	500mg †
Zinc	15mg	100%	Vanadium	3mg †
Selenium	70mcg	100%		

* Percent Daily Values are based on a 2,000 calorie diet.
† Daily Value not established.

Ingredients: Brown rice protein, pure cocoa, dextrose, apple fiber, glycine, glutamine, guar gum, cellulose, red raspberry seeds, calcium ascorbate, apple pectin, slippery elm bark, quercetin, curcumin, boswellia serrata, potassium phosphate, n-acetyl-cysteine, milk thistle seed, ascorbic acid, calcium carbonate, calcium d-glucarate, magnesium aspartate, grape seed extract, ginger root, lo han guo, mixed tocopherols (d-alpha tocopherols, plus d-beta, d-gamma, d-delta tocopherols) bioperine, niacin, zinc methionate, thiamine, riboflavine, pyridoxine, pantothenic acid, vanadyl sulfate, copper gluconate, natural beta carotene, boron, methylcobalamin, folate, chromium polynicotinate, biotin, natural kelp, amino acid chelate, selenomethionine, vitamin K, cholecalciferol, silicon dioxide.

**In the Time it Takes
to Drink a Glass of Water,
You can Enjoy Constant Health™**



Constant Health™ Delivers:

- Concentrated nutrition for optimal immune, intestinal, and detox functions
- Physician-formulated drink mix based on the latest science and research
- Quality and potency verified by an offsite, independent laboratory



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Appendix B – References

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