

# Vitamins

**Coenzymes** - Vitamins are coenzymes essential to life, and are called “essential” because the body cannot manufacture them on its own. Vitamins as co-enzymes are involved in metabolism or the rate at which cells convert food to energy.

Vitamins are required to form new cells and perform all biological processes, including digestion, building an optimally functioning immune and hormonal system, performing muscular work, and maintaining the brain and nervous system.

Vitamin C and the B complex vitamins are water-soluble, which means the body cannot store them, so they need to be consumed daily. Fat-soluble vitamins are able to be stored in fatty tissue and the liver for longer periods. Examples of fat-soluble vitamins are: A, D, and E.

## A. Water Soluble Vitamins

**Vitamin C** - Acts as an antioxidant, protecting cells from free radical damage. Needed to make collagen in the repair of injuries. Improves the absorption of iron, plays a major role in optimizing immune system functioning.

### The B Complex Vitamins:

- **Thiamine (B1)** - Also called thiamine pyrophosphate. Plays a role in the energy cycle, helps coordinate muscle and nerve activity, supports proper heart functioning, improves circulatory system.
- **Riboflavin (B2)** - Riboflavin-5-phosphate; Flavin mononucleotide (FMN). Protects cells from oxidation damage, supports cell energy production, helps convert carbohydrates to glucose, helps convert Vitamin B6 and Folate into usable forms, essential for body growth and red cell production.
- **Niacin (B3)** - Nicotinamide (adenine dinucleotide). Involved in digestion, converting food to energy, helps form healthy skin, essential for nervous system functioning.
- **Folate** (Also known as Folacin or Folic Acid) - Prevents anemia, helps produce and maintain new red blood cells, including accurate and rapid cell division, needed to make DNA and RNA, prevents damage to DNA that may lead to cancer, maintains normal homocysteine levels to prevent heart attacks.
- **Pyridoxine (Vitamin B6)** - Pyridoxal-5-phosphate. Helps produce antibodies against foreign pathogens, normal nerve function, hemoglobin-carrying oxygen, in red blood cells, helps prevent anemia, needed to break down proteins, helps maintain normal blood sugar (glucose) levels.
- **Cyanocobalamin (Vitamin B12)** - Methylcobalamin; Adenosylcobalamin. .Required for metabolic processes, formation of red blood cells, maintaining nervous system.
- **Biotin** - Essential for growth, helps break down foods for energy, assisting in metabolism, helps regulate cholesterol, and plays a role in the production of hormones.
- **Pantothenic Acid** - Works closely with biotin in digestion and absorption and energy production, helps regulate cholesterol, helps produce hormones.

- **Choline** - Phosphatidylcholine. Used in the synthesis of phospholipids, which are essential for all cell membranes and formation of all messenger molecules, involved in neurotransmission for muscles and memory, prevents fat accumulation in the liver and high cholesterol.

## B. Fat Soluble Vitamins

To ensure optimal absorbability and minimize toxicity, always follow the manufacturer's dosage suggestions on the label when it comes to fat soluble vitamin intakes, and select products with whole food-derived sources, rather than their synthetic versions.

**Vitamin A** - A group of compounds essential for vision, bone growth, reproduction, cell division and differentiation, helps regulate the immune system and fight off infections, helps destroy viruses, bacteria, Promotes healthy eyes, lungs, kidneys, intestines, healthy skin.

**Vitamin D** - Helps maintain strong bones, formed in the body when skin is exposed to sunlight, helps calcium absorption, prevents osteoporosis, rickets, osteomalacia, nerve to muscle transmission for muscular movement, helps immune system destroy invading viruses, bacteria and other illness-causing micro-organisms.

**Vitamin E** – Antioxidant. Protects cells from free radical damage from pollution and chemicals, helps immune system destroy viruses and bacteria, prevents blood clotting in arteries, helps increase blood vessel diameter, essential to cell-to-cell communication.

**Vitamin K** - Plays a major role in blood clotting preventing excess bleeding, developing strong bones, strengthens blood vessels and helps maintain their pliability to prevent bruising and excessive swelling when injured; prevents the breakdown of tissues, indicated by sagging skin.

# Minerals

**Cofactors** - Minerals are cofactors and important constituents in metabolism as essential catalysts that activate enzymes needed for every biochemical and bodily process. In order for the body to effectively utilize and absorb minerals properly, they must be in plant derived form, or included in a molecule that is allowed to pass into the cell membrane.

Minerals are primarily stored in the bone, teeth and muscle tissue and have a key role in maintaining body fluid osmotic pressure, which affects water regulation, solutes, acid-base or acid-alkaline equilibrium and blood pressure in the body. Minerals are part of the structure of soft tissues, are vital in nerve impulse transmissions and muscle contractions, including the heart.

Minerals are essential components of vitamins, enzymes and hormones. Minerals are involved in maintaining the pH or acid-alkaline equilibrium in the body. Examples of major minerals predominantly needed in the body are: boron, calcium, chloride, magnesium, phosphorus, potassium, sodium and sulfur.

Examples of trace minerals needed in minute amounts are: chromium, copper, iodine, iron, manganese, selenium, and zinc. The major essential to life minerals, also called macro minerals, are needed in larger amounts than the essential trace minerals, known as micro minerals. The form minerals are in makes the difference whether or not they can be absorbed into the cells to be utilized. Plant-derived minerals are the most absorbable and biologically available forms of minerals.

## Mineral Supplementation

In selecting a mineral nutritional supplement, the form of the mineral is what determines a product's absorbability and usefulness.

Absorbable mineral forms used in nutritional supplements include:

- Plant-derived calcium, such as coral calcium or calcium rich food powders such as kale and broccoli.
- A chelated mineral, where the mineral is molecularly bound to an amino acid
- A mineral citrate, where a mineral is bound to vitamin C
- A mineral gluconate, which binds a mineral to a salt, ester or anionic form of gluconic acid. Gluconic acid is a mild organic acid derived from glucose, which is a basic component of whole food carbohydrates.

Poorly absorbed or non-absorbable minerals in nutritional supplements include:

- Elemental minerals - If a product ingredient label lists only the mineral itself and not as a chelate, citrate or gluconate, chances are it will pass through the entire gastrointestinal digestive tract and be eliminated out of the colon. This is especially true for oyster shell calcium tablets. X-rays of the digestive tract have shown the complete un-dissolved tablet on its way out, and sewage treatment plants filter out thousands of those un-dissolved tablets as well.
- Carbonated minerals - Calcium carbonate or dolomite supplements actually reduce the amount of the stomach's hydrochloric acid, thereby reducing the ability to digest or break down food and thereby being a likely cause of digestive upsets and gastric disturbances. Yet, carbonated calcium is often considered the standard from which to compare other forms of calcium supplements because of its high calcium absorbability.

Often, people mistake the reason for their indigestion is because of what they think is excess stomach acid, when actually food remaining too long in the stomach without adequate enzyme action produces gas and can result in pain and nausea.

People often reach for digestive aids containing mineral carbonates, further reducing their amounts of essential stomach acids and therefore continually perpetuate the problem. Unless you have a gastric ulcer, which is excruciatingly painful, eating plenty of enzyme-active foods and a good digestive enzyme tablet are what is needed to help digest your foods and eliminate gastric malfunctioning, not trying to reduce your stomach acids with a calcium carbonate tablet product.

### Bypass Cheap Mineral Supplements

Minerals are too important for protecting your health to chance trying to save money on cheap elemental mineral supplements or formulations that contain non-absorbable minerals, or on those that hinder digestion and may create inflammatory conditions as the body attempts to either utilize or eliminate them. When examining countless nutritional supplements for over three and a half decades, I have rejected all but just a few of the formulations on the market due to their containing inadequate forms of minerals, *no matter how many otherwise impressive ingredients they contained*.

Mineral absorbability should be the first item you zero in on when examining a product's label, and should be the main determining factor in your purchasing decision; they are that important to your health. The small percentage of the manufacturers who obviously do their scientific homework and care enough about their customers to put out an effective product deserve your business, and those who are willing to provide you with answers to your questions satisfactorily and disclose as much information as you might ask for, deserve your trust.

Minerals are the most difficult nutrients to obtain through food since conventional agriculture does not replenish the soils with minerals other than phosphorus and potassium, and the mass production of organically grown food ingredients may not ensure you are getting the full range of known essential minerals either. Absorbable forms of minerals in your multi-nutrient tablet formulation can therefore fill in any deficiencies that may be present either in your daily dietary intake of fresh foods.

Strict FDA regulations on labeling accuracy should provide reasonable insurance that the product manufacturer's in-house analysis of the end product itself is correct. Absorbable minerals are therefore the most critical component in any cost effective and nutritionally effective formulation, and their absorbability the deciding factor in your purchase.

## Essential Major Minerals (Measured in Milligrams)

- **Sodium** - Important component of blood plasma, regulates water uptake into the cell, allows muscles to contract normally, required for normal nervous system functioning, required for digestive process.
- **Potassium** - Assists cells in determining what is allowed inside the cell, assists nerves in sensory cognition, essential for nerve transmission and release of biochemicals in this process, works with sodium to regulate water balance in and outside of the cells.
- **Calcium** - Essential for building strong bones and teeth, controls muscle growth and contractions, helps control electrical impulses to the brain, helps maintain proper blood pressure, helps blood clotting in cuts to stop bleeding, plays a role in digestion and energy production cycles.
- **Boron** - Assists calcium in building strong bones, helps with proper brain functioning, helps increase mental alertness, helps improve attention and short-term memory. Allows calcium, magnesium and phosphorus to function properly.
- **Magnesium** - Involved in energy production, metabolism of carbohydrates and fats, required for forming DNA/RNA. Deficiencies of protein, calcium, zinc and Vitamin D impair absorption of this mineral.
- **Manganese** - Activator of multiple enzymes involved in ATP (adenosine tri-phosphate) synthesis for cell energy production and in metabolism of carbohydrates, amino acids, and cholesterol.
- **Phosphorus** - Required by every cell in the body for normal functioning. Along with calcium, is a major component of bone in the form of phosphate. Needed for cell energy production during the ATP energy cycle and for energy storage. A major component of DNA/RNA, is needed for storing and transmitting genetic information. Required for activating enzymes, hormones and cell-signaling communication. Helps in blood hemoglobin functioning and in delivering oxygen to body tissues.
- **Zinc** - Helps balance blood sugar, helps maintain a healthy immune system, helps provide an optimal sense of smell and taste, helps stabilize rate of metabolism.
- **Selenium** - Antioxidant, protects cells from free radical damage, allows thyroid to produce thyroid hormone, and helps reduce risk of joint inflammation.
- **Sulfur** - Besides calcium and phosphorus, sulfur is the third most abundant mineral in the body. Used as a safe and potent medicine for thousands of years, this essential mineral is used in every single cell throughout the entire human body and is so essential to life that we cannot live without it. However, sulfur is often excluded from lists of essential minerals because it is present in all amino acids, the basic foundation of all protein molecular structures in the body.

Sulfur is usually abundant in the average diet, and also in lacto-ovo vegetarian diets and in vegetarian diets that include fish. Sulfur is plentiful in animal-derived protein foods and many vegetables. Sulfur is a component of vitamin B1 and other biochemicals the body manufactures. Sulfur is a part of the components of hair, skin, nails and cartilage in bone joints in the form of chondroitin sulfate and glucosamine sulfate, and is present in cartilage in the nose and ears.

Sulfur is important in the detoxification of the blood, liver, glandular system and other organs. Utilizing sulfur, the liver converts an accumulation of fat-soluble, toxic chemicals from the environment and works to convert them to water soluble substances that can more easily be eliminated by the body's eliminative channels: the bowels, kidneys, lungs, lymph circulatory system and skin. Sulfur, along with other plant phytonutrient constituents, has powerful antibacterial properties.

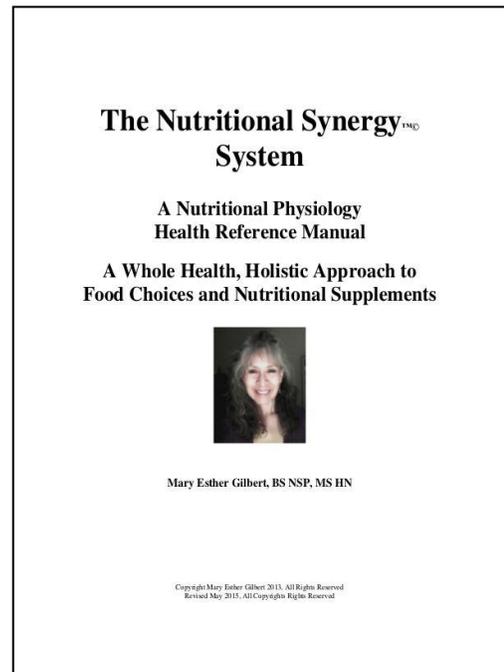
## Essential Micro Minerals (Measured in micrograms)

- **Copper** - Essential in reducing free radicals, preserving cells' electron configurations; involved in strong and flexible connective tissue, essential to brain and nervous system, prevents anemia with iron.
- **Chloride** - One of the main electrolytes in the body important for working with potassium and sodium in conducting proper electrical impulses in the nervous system. Combines with hydrogen in the stomach to produce hydrochloric acid, the highly acidic digestive enzyme required to break down protein foods. Needed to activate intrinsic factor in order to absorb vitamin B12. Helps control pH balance in the body, helps transport carbon dioxide out of the body during respiration. (Not to be confused with chorine, a deadly gas.)
- **Iron** - Red blood cell oxygen transport and oxygen storage in muscle cells, critical to cell energy production.
- **Iodine** - Glandular-regulating mineral, involves brain hypothalamus and pituitary glands, prevents brain damage.
- **Chromium** - Critical for blood sugar (blood glucose) metabolism. Enhances insulin effects.
- **Molybdenum** - Cofactor-catalyst for enzyme biochemical reactions involving protein metabolism, detoxification and forming new RNA/DNA for new cell genesis.

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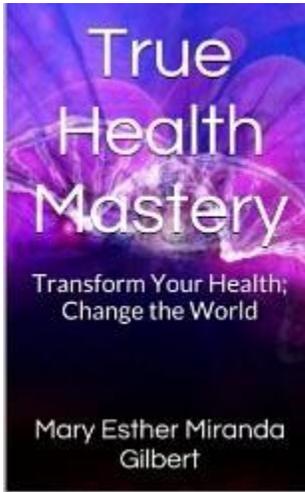
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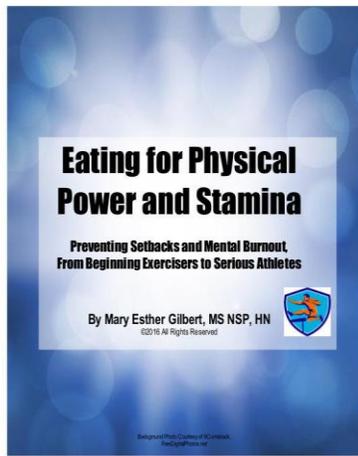
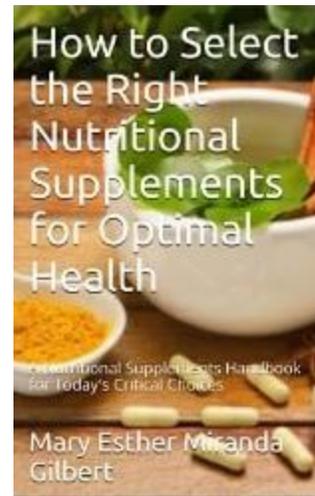
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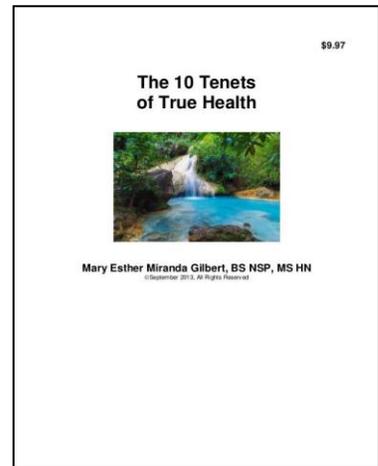


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