Glossary of Vitamins and Minerals

A

ascorbic acid -- vitamin C, a water soluble vitamin with many uses within the body. Its deficiency leads to the disease scurvy. As an antioxidant, it inhibits the formation of nitrosamines (a suspected carcinogen). Vitamin C is important for the maintenance of bones, teeth, collagen, and blood vessels (capillaries). It enhances iron absorption and red blood cell formation. The current RDA is 60 mg per day.

B

beta-carotene -- see carotene.

bioflavonoids -- a group of low molecular weight plant substances with recognized antioxidant (free radical scavenging) properties and with the ability to inhibit the activity of certain enzymes which cause inflammation in the body. There are over 20,000 bioflavonoids. Some are more active than others; some are more valuable than others. A few which have shown biological value in the laboratory have not performed well when manufactured in commercial quantities and when tested in living animals.

biotin -- a vitamin that releases energy from foods, plays a role in metabolism of amino acids, and is needed for normal hair production and growth. The current RDA is 300 micrograms per day.

boron -- a mineral that possibly plays a role in maintaining strong bones. It affects calcium and magnesium metabolism and may be needed for proper cell membrane function. No RDA has been established. This nutrient is essential for some higher animals but has not been proven to be necessary for humans.

C

calciferol -- vitamin D2, a less stable form of vitamin D. See cholecalciferol.

calcium -- an essential mineral needed in large amounts by the body for strong bones and teeth; to build and replenish bone calcium and supplementation is a treatment and cure for osteoporosis. Calcium is also necessary for muscle and nerve activity as it regulates nerve impulses and aids in the formation of neurotransmitters. Excessive levels of calcium may result in mental changes -- the extreme being stupor or even coma. The current RDA is 1000 mg per day (and may be changed to 1200 mg per day).

carnitine -- an amino acid having various physiological functions within the body.

carotene -- a provitamin and an antioxidant that is converted by the body to vitamin A as needed. No RDA has been established for beta-carotene.

cholecaliferol -- vitamin D3, the most stable form of vitamin D. Vitamin D is necessary for the formation of strong bones and teeth by mediating intestinal calcium and phosphorus absorption, bone calcium and phosphorus metabolism and muscle activity. It usually acts as a hormone precursor as it requires two stages of metabolism before reaching actual hormonal form. Also involved in the regulation of genes involved in cell growth, differentiation and proliferation. The current RDA is 400 IU per day.

choline -- a vitamin B cofactor (covitamin) that is critical to memory, learning and mental alertness. Manufacture of cell membranes and the neurotransmitter acetylcholine (as its precursor) depend on it as components. Choline helps increase the amount of acetylcholine in the memory circuits of the temporal lobe. It also helps control cholesterol buildup and aids the liver in eliminating toxins. As a lipotropic nutrient, it prevents fat accumulation in the liver. Although supplemental choline improves memory performance in younger people, it has failed to consistently help elderly adults who already suffer from memory loss or Alzheimer's disease. No RDA has been established. This nutrient is essential for some higher animals but has not been proven to be necessary for humans.

chromium -- a mineral that, as part of the Glucose Tolerance Factor (GTF), works with insulin to regulate blood sugar levels. No RDA has been established.

cobalamin -- (vitamin B12) a B vitamin, also known as cyanocobalamin, responsible for growth, red blood cell production, and plays an important role in the formation of the myelin sheath around nerve fibers. It also helps the body transport and store folic acid and is involved in the synthesis of genetic material (DNA). Helps promote growth, increase energy and improve concentration. Vitamin B12 deficiency can cause pernicious anemia, nerve dysfunction (weakness, poor reflexes and strange sensations in the arms and legs) and impaired mental activity. It has also been linked to depression, especially in the elderly. The current RDA is 6 micrograms per day.

coenzyme Q10 -- also known as CoQ10, an enzyme found in cells and most all foods. The "10" refers to the length of the enzyme "tail" chemical structurally speaking. CoQ10's primary function is as a catalyst to the creation of energy on a cellular level. CoQ10 is synthesized in the body but this ability may decline with age.

colloidal silver -- a special, safer form of silver, a metallic element that has remarkable antibacterial and antiviral properties. Internally and externally used as an antiseptic and antifungal.

copper -- a mineral that is essential for red blood cell formation and hemoglobin synthesis. It is involved in many enzyme systems including superoxide dismutase (SOD), a major antioxidant enzyme system. The current RDA is 2 mg per day.

cyanocobalamin -- see cobalamin.

D

diatomaceous earth -- earth materials composed of diatoms, skeletons of dead unicellular algae, usually with two symmetric halves. Also known as diatomite, kieselguhr, fossil flour and infusorial earth. See silica.

docosahexaenoic acid -- also known as DHA and omega-3 fatty acid, it is a polyunsaturated fatty acid playing a critical role in infant brain development and vision. Before a child is born, DHA from the mother's blood travels to the placenta where it is used for membrane development in the brain and retina. Research has also linked the rising rate of depression among adults to an imbalance in the ratio of omega-3 fatty acids to omega-6 fatty acids (arachadonic acid).

E

F

folic acid -- a B vitamin used in red blood cell production, protein synthesis, and necessary for DNA and RNA synthesis and metabolism, hence it plays an essential role in all cell divisions and in the development of the fetal nervous system. Essential for proper brain function so is important for mental and emotional health. It is also involved in the metabolism of fats. Folic acid deficiency can lead to megaloblastic anemia and poor growth in children and can also contribute to various psychiatric disturbances including depression. As many as 31 to 35 percent of all depressed patients have folic acid deficiencies. Folic acid supplementation is perhaps most widely known for preventing neural tube defects in the developing fetus. The current RDA is 400 micrograms per day.

G

H

I

inositol -- a vitamin B cofactor (covitamin) that is critical for cell membranes and nerve function. It occurs in cell membranes as phosphatidylinositol. It is involved in calcium mobilization. The neurotransmitters serotonin and acetylcholine depend on phosphatidylinositol for proper functioning. Two clinical trials have shown that rather large amounts of inositol (in grams per day) can improve certain psychiatric disorders, such as obsessive-compulsive disorders, panic disorder, schizophrenia, Alzheimer's disease, attention deficit disorder, autism, electroconvulsive therapy-induced memory loss, and depression. No RDA has been established. This nutrient is essential for some higher animals but has not been proven to be necessary for humans.

iodine -- a mineral needed for proper functioning of the thyroid gland and production of thyroid hormones. The current RDA is 150 micrograms per day. Iodized salt has been fortified with iodine to help prevent iodine deficiency.

iron -- an essential mineral necessary for hemoglobin in red blood cells to carry oxygen and energy metabolism and prevents anemia. Particularly critical to motor and mental development during infancy, an iron deficiency can adversely affect the ability to learn and understand new information and may result in poor concentration and attention span. Though adult menopausal women require more iron in their diet than men, studies have shown that most individuals are deficient in iron. Iron overdose in children is the leading cause of chemical toxicity in children. The current RDA is 18 mg per day.

J

K

kieselguhr -- a diatomaceous earth. Also known as diatomite, guhr and Tripoli powder. Used as an absorbent and for filtering. See silica.

L

M

magnesium -- an essential mineral needed in large amounts by the body to build and replenish bone and teeth, in DNA genetic material synthesis, and in many enzyme systems, especially those involved in energy production. Magnesium is also necessary for muscle and nerve activity as it regulates nerve impulses and aids in the formation of neurotransmitters. Magnesium has been studied and found to reduce the incidence of subsequent recurring heart attacks by more than 50% and plays a major role in heart activity. The current RDA is 400 mg per day.

manganese -- a mineral that is a cofactor in many enzyme systems including those involved in bone formation, energy production and protein metabolism. No RDA has been established.

molybdenum -- a mineral required for proper growth and development. It plays a role in fat and nucleic acid metabolism and is needed for proper sulfur metabolism. No RDA has been established.

N

niacinamide -- see niacin.

niacin -- (vitamin B1) a B vitamin necessary for the release of energy from carbohydrates, fats, and proteins, and enhances the ability of red blood cells to carry oxygen. It is also vital to the formation and maintenance of many tissues, including

nerve tissue. Provides nutritional support for healthy cholesterol levels. Needed daily for healthy skin, the nervous system, and for cell metabolism. A severe niacin deficiency produces pellagra, a disease characterized by the three D's: dermatitis, diarrhea and dementia. Niacinamide is another form of niacin but unlike niacin does not produce the "flushing" feeling that commonly occurs from taking high doses of niacin. The current RDA is 20 mg per day.

O

omega-3 fatty acid -- see docosahexaenoic acid.

P

PABA -- para-aminobenzoic acid functions in the breakdown and utilization of proteins and in the formation of red blood cells.

pantothenic acid -- (vitamin B5) a part of coenzyme A and is involved in the release of energy from carbohydrates. It is vital to the synthesis and degradation of sterols, fatty acids and steroid hormones. Pantothenic acid is also involved in the acetylation of choline into acetylcholine, an excitatory neurotransmitter. The current RDA is 10 mg per day.

phenylalanine -- an amino acid that, when consumed in elevated quantities (compared with the normal diet), has the ability to greatly decrease chronic pain, and, in some cases, help relieve depression.

phosphatidylserine -- the major phospholipid in the brain. Present in cell membranes, it plays a major role in determining their integrity and fluidity. The brain generally makes enough, but deficiencies of essential fatty acids or vitamins such as folic acid and vitamin B12 can inhibit production.

phosphorus -- an essential mineral that maintains strong bones and teeth. It is necessary for muscle and nerve function. The current RDA is 1000 mg per day.

potassium -- a mineral that as an electrolyte is needed to maintain fluid balance, proper heartbeat and nerve transmission. No RDA has been established.

pyridoxine -- (vitamin B6) a B vitamin needed for protein and fat metabolism, nerve function and releases energy from foods. It is essential for function of red blood cells and hemoglobin synthesis. Necessary for the production of amino acid-derived neurotransmitters such as norepinephrine, serotonin and dopamine. Helps assimilate fat and protein and helps promote proper synthesis of nucleic acids and works as a natural diuretic. B6 deficiency can cause many ailments including slow learning and visual disturbances. Low levels of this vitamin may also provoke epileptic seizures in people prone to them. The current RDA is 2 mg per day.

Q

R

riboflavin -- (vitamin B2) a water soluble B vitamin that helps promote healthy skin, hair, and nails, and functions in all neurological mechanisms as well as other cell systems such as protein metabolism. It also releases energy from foods. The current RDA is 1.7 mg per day.

S

selenium -- a mineral that acts as an antioxidant and is a constituent of glutathione peroxidase. It protect vitamin E. No RDA has been established. Clinical evidence has shown that supplementation with selenium can reduce the risk of cancer by more than 50%.

shark cartilage -- a specially prepared powder obtained from the cartilage of sharks and composed of mucopolysaccharides. It is believed that it contains ingredients capable of preventing and treating cancer.

silica -- a mineral compound composed primarily of silicon as silicon dioxide and is the major component of sand and glass. It is an excellent absorbent for many organic compounds. Nutritionally consumed through supplements such as diatomaceous earth, kieselguhr, and in the herb horsetail. Horsetail is the preferred method of consumption since it contains organic forms of silicon that are better assimilated and absorbed by the body than are inorganic forms of silicon. Silicon is a good elemental mineral nutrient for strengthening hair, bones and nails.

silicon -- a mineral and element necessary for bodily functions and growth. Helps build strong bones, teeth and nails, and stimulates calcium absorption. No RDA for silicon has been established. The compound of silicon and oxygen is silica -- see silica. No RDA has been established. This nutrient is essential for some higher animals but has not been proven to be necessary for humans.

silicon dioxide -- see silica.

T

thiamine -- (vitamin B1) a B vitamin that helps convert glucose to energy through carbohydrate metabolism, aids in nerve function and needed for normal appetite. It also mimics acetylcholine (a neurotransmitter involved in memory) and plays a role in brain functions related to memory and cognition. Chronic, heavy alcohol consumption can cause a thiamine deficiency resulting in Wernicke-Korsakoff syndrome, a disease marked by mental confusion. Severe thiamine deficiency leads to beriberi, a disease characterized by weakness, wasting, nerve inflammation and numbness of the hands and feet. A recent study shows that high dose thiamine supplementation (3-8 grams/day) may

actually decrease the deleterious effects of senility. Lower but moderate doses (50 mg/day) of thiamine has improved mood and energy. The current RDA is 1.5 mg per day.

L-tyrosine -- one of the non-essential amino acids found in protein-rich foods such as meat, poultry, seafood and tofu. Is a precursor to the neurotransmitters norepinephrine and dopamine. These chemical messengers promote mental acuity and alertness. Increased levels of the neurotransmitters can affect mood and behavior, fostering a tendency to think more quickly and react more rapidly.

L-tryptophan -- an amino acid integral to the production of serotonin, a neurotransmitter with sedative and sleep-promoting effects. Tryptophan is converted within the body into niacin. The body uses thiamine, pyridoxine and riboflavin (and possibly biotin) for the conversion. L-Tryptophan is found in foods such as bananas, milk and sunflower seeds. Protein is approximately 1% tryptophan. Once available as a supplement, it was recalled by the Food and Drug Administration (FDA) in 1989 because of reported neuromuscular side effects. Although these effects were later traced to a bacterial contaminant from a single manufacturer in Japan, the FDA has not withdrawn its ban of over-the-counter L-tryptophan sales.

U

V

vitamin A -- a fat soluble vitamin essential for healthy skin, eyes (vision), bones, hair, teeth, cell reproduction, wound healing, and immunity. The current RDA is 5000 IU per day. Vitamin A is not an antioxidant whereas beta-carotene, its precursor and pro-vitamin A, is an antioxidant

vitamin B1 -- see thiamine.

vitamin B2 -- see riboflavin.

vitamin B3 -- see niacin.

vitamin B5 -- see pantothenic acid.

vitamin B6 -- see pyridoxine.

vitamin B12 -- see cobalamin.

vitamin C -- see ascorbic acid.

vitamin D -- see cholecalciferol (vitamin D3).

vitamin D2 -- see calciferol.

vitamin D3 -- see cholecalciferol.

vitamin E -- a powerful antioxidant, it helps protect cell membranes, lipoproteins, fats and vitamin A from destructive oxidation. It also helps protect red blood cells. The RDA for vitamin E is currently 30 IU. .

vitamin K -- a vitamin needed for proper blood clotting. No RDA has been established.

W

X

Y

Z

zinc -- an essential mineral for healthy skin, nails and strong teeth. It helps wound healing and is a component of many enzymes. It is a component of the hormone insulin required for blood sugar control. It is needed for proper taste and hearing. It is important in wound healing and enzyme activation. Zinc deficiency may contribute to dementing illnesses such as Alzheimer's disease. A small study suggests that supplemental zinc may provide benefits in cases of dementing illness. The current RDA is 15 mg per day