

19. Rutin: A bioflavonoid, which helps to maintain the strength of blood capillaries. Deficiency can result in undue capillary fragility.

MINERALS

20. Boron: Very important in maintaining the density of bones.

21. Calcium: Activates enzymes involved in the digestion of fats and proteins. Involved in blood clotting, nerve transmission, contraction and relaxation of muscles (including the heart). Aids the absorption of Vitamin B12. Helps to keep the blood pressure low (i.e. it prevents high blood pressure) including the high blood pressure of pregnancy, which is known as *pre-eclamptic toxemia*. Appears to protect against colon cancer. A very important nutrient of which most of the population consumes too little, and usually from a bad (i.e. dairy) source. (Ninety-nine percent of body calcium [about 2½ pounds] is in bones and teeth.)

22. Chromium: Activates many enzymes involved in the metabolism of sugar and the formation of proteins. Involved in insulin production. Diabetes and hypoglycemia may be chromium deficiency diseases, and have responded to the administration of GTF Chromium (Chromium Polynicotinate). (GTF stands for Glucose Tolerance Factor.) Lowers serum cholesterol and increases high density lipoproteins (HDLs i.e. “good cholesterol”).

23. Copper: Promotes the absorption of iron, and is used to make hemoglobin. Promotes normal nervous system anatomy and function. Aids bone development. Is part of the enzymes required for energy release in cells. Lowers total cholesterol and increases high density lipoproteins (HDLs i.e. “good cholesterol”). Boosts immunity. Relieves the symptoms of rheumatoid arthritis.

24. Iodine: Needed by the thyroid gland. Important constituent of thyroid hormone (i.e. *thyroxin*) which regulates the level of all body activity. Promotes normal hearing. Deficiency leads to goiter, in which the thyroid gland becomes greatly enlarged. Insufficient thyroxin production results in hypothyroidism.

25. Magnesium: Important constituent of bone. Needed for strong bones. Part of many enzyme systems. Essential for normal nerve functioning. Essential for muscle relaxation. Low levels may lead to mental illness, e.g. depression, schizophrenia, and sleep disturbances. Autistic children improve when given large doses of magnesium and Vitamin B6. Essential in the metabolism of sugar. Aids in lowering high blood pressure, and in protecting the eye from blood vessel damage caused by high

blood pressure. Oral contraceptives, and the drug *Cyclosporin A*, lower the level of magnesium.

26. Manganese: Important in the synthesis of body proteins, and in the body’s use of insulin to regulate blood sugar. More is needed during athletic training and during recovery from injury.

27. Molybdenum: Rare mineral, but an essential nutrient. A co-factor in the action of several enzymes involved in energy production. Seems to assist in the absorption of iron.

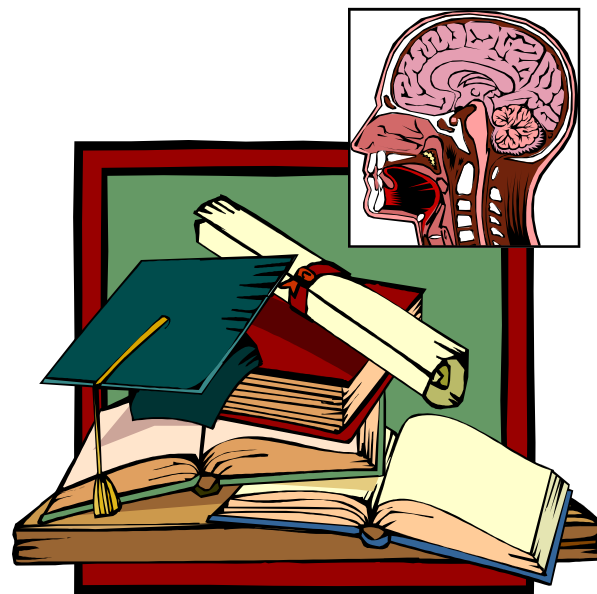
28. Phosphorus: Needed in the extraction of energy from food. It reduces the pain of arthritis. Needs the proper levels of Vitamin D and Calcium to function properly. May help to prevent cancer. Deficiency results in weakness, bone pain, malaise, and loss of appetite.

29. Potassium: Essential for maintaining the fluid balance of the cells. Required to convert glucose to glycogen for storage. Essential in nerve transmission, contraction of muscles, and hormone secretion. Necessary to prevent high blood pressure. Low levels can cause nausea and vomiting, muscle cramps, muscle weakness, rapid heart beats, and, in extreme cases, heart failure. Protects against strokes. Protects the kidney from damage caused by high blood pressure. (Human cells contain more potassium than any other mineral.)

30. Selenium: Essential for maintaining a healthy heart. Helps in maintaining a healthy skin. Protects the body from the toxic effect of heavy metals, e.g. mercury and other pollutants that cause cancer, such as PCBs. An antioxidant. Part of the enzyme *glutathione peroxidase*, which neutralizes free radicals and so slows the aging process. Prevents cancer. Works with Vitamin A and E to enhance the beneficial effects of all three. Boosts immunity.

31. Zinc: An essential component of many important enzymes. Promotes wound healing. Maintains normal sharpness of senses of taste and smell. Aids night vision. Boosts immunity and reproductive function. Aids mental sharpness. Required in glucose metabolism. Diabetics tend to be low in zinc. Strenuous exercise lowers the level of zinc. Protects the body from the toxic effects of such pollutants as carbon tetrachloride, cadmium, and lead. AIDS patients are usually low in zinc. Seems helpful in the treatment of *anorexia nervosa*. Alcohol, oral contraceptives, steroids, and diuretics reduce the absorption of zinc, leading to low levels.

KNOW YOUR VITAMINS & THEIR FUNCTIONS



By Dr. Uche Akwuba, LCE

Neurosurgeon.

Medical Degrees (With Honors) from
The University of London, England.

Neurosurgery Training at
Downstate Medical Center, Brooklyn, NY
Part of the State University of New York
Founder, HealthiLifer Wellness Club IP



The 31 Needed Vitamins & Minerals and Their Functions

We need 31 vitamins & minerals for good health. To give you a general idea of what each one does, I list their functions, below. Understand, however, that most vitamins and minerals work together to achieve their overall effects.

The vitamins and minerals, which I have listed in alphabetical order, below, are the ones that my research shows we all *need* in larger quantities than can be found in today's highly processed foods. These same vitamins and minerals, in various doses and combinations, are found in PerfectBalance Multivitamin; AthleteX-1: Performance Multivitamin; and Zap-a-Cold Vitamin Formula for the Common Cold.

1. Vitamin A (Beta-carotene): Prevents cancer. Protects against pollution. Boosts immunity. Maintains healthy skin. Promotes skin repair. Aids vision. Gross deficiency results in night blindness.

2. Vitamin B1 (Thiamin): Essential in the metabolism of carbohydrates. Maintains skin and its healthy growth. Boosts resistance to disease. Is an antioxidant. Needed more by persons on oral contraceptives and on long-term kidney dialysis. Severe deficiency causes *beriberi*, a disease that can cause burning and numbness in the feet and weakness of the legs. Deficiency is common in alcoholics.

3. Vitamin B2 (Riboflavin): Essential in the metabolism of proteins and lipids. Needed in tissue repair and for the formation of healthy blood cells. Boosts immunity. Prevents cancer. Needed for healthy eyes. Prevents cataracts. Used as treatment for carpal tunnel syndrome. Deficiency causes cheilosis (cracks in the corners of the mouth), burning lips, red or purple tongue, difficulty in swallowing, flaking of skin around the nose, eyebrows, cheeks, chin, or hairline.

4. Vitamin B3 (Niacin): A co-enzyme in reactions that maintain a healthy skin, food canal, and nervous system. Essential in lipid metabolism. Lowers total serum cholesterol by lowering triglycerides and very low density lipoproteins (VLDLs i.e. "bad cholesterol"), and increasing high density lipoproteins (HDLs i.e. "good cholesterol"). Prevents cancer. Severe deficiency leads to pellagra, a disease characterized by dermatitis, diarrhea, and dementia. Needs are higher in persons with cancer, those taking isoniazid (used in the treatment of tuberculosis), or persons taking oral contraceptives.

5. Vitamin B6 (Pyridoxine): A widely needed co-enzyme in the metabolism of proteins and fatty acids. Boosts immunity. Required by the body to turn iron to hemoglobin, the oxygen-carrying protein in red blood cells. Deficiency of this extremely important vitamin is *very* widespread. One estimate is that over 75% of the population may be deficient. Deficiency may cause mental illness, and can precipitate heart attacks. Useful in the treatment of carpal tunnel syndrome. Helps asthma, sickle cell anemia, diabetes, premenstrual syndrome (PMS), and even various types of mental illness.

6. Vitamin B9 (Folic Acid): Essential in protein metabolism, including body repair, e.g. after surgery. Boosts immunity. Promotes maturation of red blood cells. Prevents cancer. Deficiency leads to anemia, mental illness, and such malformation of fetuses as *spina bifida* and harelip.

7. Choline: Needed in the transport and metabolism of fats. Helps to prevent the accumulation of abnormal quantities of fat in the liver. Used in the formation of acetylcholine, which is an agent utilized in the transmission of nerve impulses.

8. Inositol: Involved in the synthesis of phospholipids. It is essential for the digestion and absorption of fats.

9. PABA (Para-Amino Benzoic Acid): Needed for the formation of folic acid in the body. Combats gray hair in animals, but is not definitely known to do the same in humans.

10. Vitamin B12 (Cobalamin): A co-enzyme needed for fat and carbohydrate metabolism. Helps maintain the normal anatomy of the nervous system. With Vitamin C, prevents cancer (as proved in laboratory animals). Deficiency causes pernicious anemia, and nervous system diseases such as memory loss, depression, and impairment of leg and finger coordination.

11. Vitamin C (Ascorbic Acid): Boosts immunity. Prevents cancer. Helps asthma. Fights stress. Promotes wound healing. Is an antioxidant, protecting the other antioxidant vitamins, A and E, from being oxidized in the body. Very high doses prolong the life of cancer patients. Severe deficiency causes scurvy, characterized by tiredness, weakness, irritability, muscle and joint pains.

12. Vitamin D: Increases the absorption of Calcium and Phosphorus from the intestine. Increases the uptake of minerals by the bones. With Calcium, has anticancer properties. May improve muscle strength. Deficiency in children results in rickets, which is characterized by stunted growth, delayed tooth development, and deformities of bones. In adults, deficiency results in reduced total bone mass, causing the bones to become more brittle and therefore prone to frequent fractures.

13. Vitamin E: Slows down the aging process by prolonging the useful life of cells. A powerful antioxidant. Prevents cancer. Protects vitamins A and C from oxidation. Helps to increase the level of *superoxide dismutase*, an enzyme that the body produces, and which neutralizes *free radicals*. (Free radicals speed up the aging process, and also induce cancer.) Protects against pollutants, e.g. lead, mercury, carbon tetrachloride, benzene, nitrous oxide, nitrites, and nitrates. Also protects the body from the damaging effects of anticancer chemotherapy. Increases the effectiveness of radiation therapy for cancer. Lowers total cholesterol levels in the blood, while increasing the level of high density lipoproteins (HDLs i.e. "good cholesterol"). Promotes the healing of wounds, reducing the amount of scar tissue. Helps heal fibrocystic disease (non-cancerous lumps in the breast). Boosts immunity. Reduces the distressing symptoms of the pre-menstrual syndrome (PMS). Protects against heart attacks and strokes. Protects against the serious complication of surgery known as thrombophlebitis, which can lead to pulmonary embolism and death.

14. Vitamin H (Biotin): An important co-enzyme in the metabolism of carbohydrates and in the formation of proteins and fats. Made in the body by normal bacteria living in the large bowel. Deficiency causes seborrheic dermatitis and hair loss.

15. Vitamin K: Very important factor in the formation of blood clots. (If blood failed to clot, everyone would bleed to death.) Important in bone metabolism, and thus protects against weakness of bones in the elderly.

16. Bioflavonoids: Antioxidant. Bioflavonoids increase the absorption of Vitamin C. With Vitamin C, they reduce the symptoms of oral herpes. May be useful in the treatment of cataracts.

17. Coenzyme Q: Important catalyst in the chain of reactions that leads to the release of energy needed by cells. An antioxidant. Protects the heart from damage when its blood supply is reduced (as in a *heart attack*, or in *angina pectoris*). Strengthens cell membranes. Boosts immunity. May help diabetes and reduce periodontal (i.e. gum) disease.

18. Pantothenic Acid: The body converts Pantothenic Acid into Coenzyme A, which is widely involved in the metabolism of proteins, fats, and carbohydrates. Involved in the synthesis of steroids, cholesterol, hemoglobin, bile, and acetylcholine, an important neurotransmitter. Combined with other B vitamins, it increases exercise tolerance, delaying the onset of fatigue. Promotes wound healing. Improves the symptoms of rheumatoid arthritis.