

Vitamins, Minerals and others

Like most people, we know we should take vitamins but what we rarely understand is why. Again, vitamins from natural sources are superior to the synthetic variety.

When it comes to fear of toxicity it is mainly the fat-soluble vitamins that need to be taken as directed. Vitamin A group is best not taken as a supplement as it can lead to complications. It is better to take it as natural beta-carotene which will be converted by the body to vitamin A.

Vitamin E can prove to be easily toxic and lead to complications if taken over a long period, hence vigilance is advised. It is better to get it from natural sources rather than supplements.

One can be cautious but there is no need to panic because it takes a lot of vitamins taken in excessive amounts over a long period of time to get over dosed. Remember Vitaminosis is a very rare phenomenon.

Fat soluble vitamins can be stored by the body over very long periods without any adverse effects, and is safely released into the system as required by the body.

Further, there are some vitamins such as Vitamin C which is virtually impossible to get an over dose of.

The reality is that more people do not get the required amount of vitamins and consequently lead a poor quality of life.

Vitamins are group of organic substances that are required in the diet of humans and animals for normal growth, maintenance of life, and normal reproduction. Vitamins act as catalysts; very often either the vitamins themselves are coenzymes. Besides vitamins, foods contain—carbohydrates, proteins, fats, minerals, and water—and other substances necessary for health.

The vitamins differ in structure, and there is no chemical grouping common to them all. A substance that functions as a vitamin for one species does not necessarily function as a vitamin for another species.

The word vitamin was derived from the term vitamine, used by Polish-American biochemist Casimir Funk, to describe an amine (organic base) that was essential to life (it was later found to be thiamine).

Biotin is a member of the B complex; it was first isolated in 1935 from dried egg yolk, and its structure was established in 1942. Biotin is usually found attached to a lysine residue in certain enzymes, where it participates in reactions involving the transfer of carboxyl or they form integral parts of coenzymes.

In 1912 Hopkins and Funk formulated the vitamin hypothesis of deficiency disease; that is, that certain diseases are caused by a dietary lack of specific vitamins.

The chemical structures of the vitamins are all known, and all of them have been synthesized; the vitamins in foods are identical to the synthetic ones. A well-balanced diet usually satisfies the minimum vitamin requirements of human beings.

The Recommended Dietary Allowance (RDA) of each vitamin is the standard guideline put forward by the Food and Nutrition Board, National Academy of Sciences–National Research Council. It is based on the nutritional needs of an average, healthy person. Different amounts may be recommended for children, older people, lactating mothers, or people dealing with an ongoing disease process. The U.S. RDA was the federal government's interpretation of the National Research Council's RDA. Since mid-1994, the U.S. RDA has been replaced on food labels by a Percent Daily Value (the percentage of the U.S. RDA that the labeled food offers). Listings for vitamins A and C are required; others are optional.

The amount of each vitamin that should be consumed for optimal health and the wisdom of taking vitamin supplements, especially in 'megadoses,' is a controversial question.

The Dietary Supplement Health and Education Act of 1994 defined vitamins as dietary supplements (rather than drugs) and shifted the burden of proof of safety from the manufacturers to the Food and Drug Administration.

Although vitamins were previously seen only as preventives against the various deficiency diseases, more and more studies have examined additional health benefits of vitamins. Health claims that are unsubstantiated by scientific study, however, are regarded by many health and nutrition experts as fraudulent or dangerous, and many physicians now question the need for healthy persons to take multivitamin supplements, because many foods, such as milk and bread, are fortified with vitamins.

Vitamins were originally classified according to their solubility in water or fats, and as more and more were discovered they were also classified alphabetically.

The fat-soluble vitamins are A, D, E, and K; the B complex and C vitamins are water soluble.

A group of substances that decrease blood capillary fragility, called the vitamin P group, are no longer considered to be vitamins.

Vitamin A

Vitamin A (retinol), a fat-soluble lipid, a broad class of organic products found in living systems. Most are insoluble in water but soluble in non-polar solvents. The definition excludes the mineral oils and other petroleum products obtained from fossil material.

It is either derived directly from animal foods such as liver, egg yolks, cream, whole milk, cheese or butter or is derived from beta-carotene a pigment that occurs in leafy green vegetables and in yellow fruits and vegetables.

Vitamin A is essential to skeletal growth, normal reproductive function, and the health of the skin and mucous membranes. It also boosts immune function and promotes tissue healing. It is recommended for fighting infections, excessive menstrual bleeding, peptic ulcer, inflammatory bowel disease, acne, and hypothyroidism. It is involved with skin, immunity, resistance to infection, antioxidant, cancer prevention and also involved with a host of body functions.

Vitamin A sharpens eyesight. The human eye functions somewhat like a camera; that is, it receives and focuses light upon a photo-sensitive area called the retina. Vitamin A is vital to maintain the functional health of this tissue.

Vegans are at risk for vitamin A deficiency, since it is found only in animal foods. Beta-carotene is converted to vitamin A in the body on a limited basis, but is not a substitute for getting vitamin A directly or in its pure form; however both forms are required.

Dosage:

5,000-10,000 I.U. Do not exceed 5,000 I.U. if you are pregnant, since it can potentially cause birth defects. Vitamin A can raise liver enzyme levels, so check with a doctor before supplementing, if you have a history of alcoholism or liver disease, or plan to take doses above 25,000 I.U. (Under usual circumstances, too much vitamin A can also cause hair loss.)

The Carotenes -- Beta-carotene, Alpha-carotene, Lycopene

These carotenes fight free radical oxidation, the process which causes cell breakdown, rapid aging, cancer, and degenerative disease. Lycopene (found in high concentrations in tomatoes) is the most powerful, followed by alpha-carotene, then beta-carotene. Antioxidants are good basic prevention tools, warding off cancer and heart disease and slowing the aging process. Exposure to stress, pollution, chemicals, and pesticides increases your need even more.

The usual dose of beta-carotene is 25,000 I.U., but a therapeutic dose as high as 300,000 are safe (though it may turn skin yellow). For best effects, get these from natural sources-- eat your fruits and veggies!

In addition, beta-carotene, like other carotenoids, is now recognized as an important antioxidant, substance that prevents or slows the breakdown of another substance by oxygen.

Vitamin B Complex

Vitamin B's is primary for energy metabolism, brain power, and nerve cell function.

When you are run-down, fatigued, fuzz-headed, or stressed out, or you are on the Pill, taking antibiotics, or drinking a lot of alcohol – all activities that deplete B-vitamin stores and interfere with their absorption from foods.

A good quality multi should include all of the B-vitamins, including thiamin (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5), pyridoxine (B6), biotin, folic acid, and cobalamin (B12) in a dosage range between 5-50 mg of each.

Commonly grouped as the vitamin B complex are eight water-soluble vitamins.

Thiamine

Thiamine (vitamin B1 or anti-beriberi factor) is a necessary ingredient for the biosynthesis of the coenzyme thiamine pyrophosphate; in this latter form it plays an important role in carbohydrate metabolism.

Good sources are yeast, whole grains, cereals, oatmeal, lean pork, poultry, fish, eggs, milk, dried beans, nuts, legumes and green vegetables.

This vitamin is a factor in the maintenance of appetite, normal intestinal function, and in the health of the cardiovascular and nervous systems. It ensures energy production; growth and functioning of nerve tissue, memory and emotional stability among other things.

A deficiency of the vitamin may lead to beriberi. This disease was first shown to result from a dietary deficiency.

The recommended dietary allowance for adults is 1.2 to 1.4 mg for men and 1.0 to 1.1 mg for women.

Riboflavin

Riboflavin (vitamin B2 or lactoflavin) is used to synthesize two coenzymes that are associated with several of the respiratory enzymes of plants and animals (including humans) and is therefore important in biochemical oxidations and reductions.

Deficiency leads to fissures in the corners of the mouth, inflammation of the tongue showing a reddish purple coloration, skin disease, and often severe irritation of the eyes.

It is involved in the process of energy production, synthesis of fats and amino acids; and cellular growth.

Found chiefly in milk, yogurt, most fermented foods, organ meats, beef, green leafy vegetables, broccoli, and eggs.

The recommended dietary allowance for adults is 1.4 to 1.7 mg for men and 1.2 to 1.3 mg for women.

Niacin

Niacin was first synthesized in 1867. The amino acid tryptophan, organic compound, one of the 20 amino acids commonly found in animal proteins is the precursor of niacin. Niacin and niacinamide function in the biochemistry of humans and other organisms as components of the two coenzymes nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP); these operate in many enzyme-catalyzed oxidation and reduction reactions.

It is also involved in the process of energy production, synthesis and breakdown of fats, carbohydrates and proteins; synthesis of cholesterol, red blood cells and a host of other functions.

The B vitamins niacin (nicotinic acid) and niacinamide (nicotinamide) are commonly known as preventives of pellagra which was shown to result from a dietary deficiency. The deficiency state in humans causes skin disease, diarrhea, dementia, and ultimately death.

Found in lean meats, poultry, fish, whole grain and breads, cereals, peanuts, peanut butter, milk, and eggs, dried beans and other legumes are among the best sources of niacin.

The recommended daily dietary allowance for adults is 16 to 19 mg niacin equivalents (60 mg of dietary tryptophan to 1 mg of niacin) for men and 13 to 14 mg for women.

Vitamin B6 Group

Pyridoxine, pyridoxal, and pyridoxamine make up the vitamin B6 group. They all combine with phosphorus in the body to form the coenzyme pyridoxal phosphate, which is necessary in the metabolism of amino acids, glucose, and fatty acids. Vitamin B6 is involved with the synthesis and breakdown of amino acids; multiplication of cells; red blood cells, immune cells, health of neurotransmitters.

It improves metabolism, immune function, and nervous system. Helps cells multiply, and ensures healthy pregnancy. It is also a natural anti-depressant, helping produce neurotransmitters. Plus, B6 fights heart disease and osteoporosis by breaking down artery-clogging amino acid homocysteine in the blood. For healthy menstruation, fertility, and pregnancy, and to treat PMS, enhance energy and mood, and fight disease. If you are on the Pill, you are at high risk for B6 deficiency.

Deficiency can result in central nervous system disturbances (e.g., convulsions in infants). The role of B6 in serotonin, an organic compound was first recognized as a powerful vasoconstrictor occurring in blood serum and gamma-amino butyric acid synthesis. More generally the effects of deficiency include inadequate growth or weight loss and anemia due to the role of B6 in the manufacture of hemoglobin.

The best sources of B6 vitamins are liver and other organ meats, poultry, fish, milk potatoes, vegetables, dried beans, and egg yolks, corn, whole-grain cereal, and seeds.

The recommended dietary allowance for adults is 2.0 to 2.2 mg for men and 2 mg for women. Additional doses are required in pregnancy and by those taking oral contraceptives or the tuberculosis drug izoniazid. 50-100 mg of B6 or pyridoxal 5-phosphate (its activated form) may be required in some cases. Severe nerve damage has been reported from megadoses.

Pantothenic Acid

Pantothenic acid, another B vitamin, is present in perhaps all animal and plant tissues, as well as in many microorganisms. Good sources of it include liver, kidney, eggs, and dairy products. It is a component of the important substance coenzyme A, which is involved in the metabolism of many biochemical substances including fatty acids, steroids, phospholipids, heme, amino acids, and carbohydrates. The adrenal gland is an important site of pantothenic acid activity. There is no known naturally occurring deficiency state and no known toxicity to pantothenic acid. The estimated safe and adequate daily intake for adults is 4 to 7 mg.

Biotin

Biotin is a B vitamin that functions as a coenzyme in the metabolism of carbohydrates, fats, and amino acids. Although it is vitally necessary to the body, only exceedingly small quantities are needed, and since biotin is synthesized by intestinal bacteria, naturally occurring biotin deficiency disease is virtually unknown. The disease state can be produced artificially by including large quantities of raw egg white in the diet; the whites contain avidin, a biotin antagonist. Especially good sources of this widely distributed vitamin include egg yolk, kidney, liver, tomatoes, and yeast. There is no known toxicity to biotin. The estimated safe and adequate daily intake for adults is 100 to 200 micrograms.

Folic Acid

Folic acid (pteroylglutamic acid, folacin, or vitamin B9) occurs abundantly in green leafy vegetables, fruits (e.g., apples and oranges), dried beans, avocados, sunflower seeds, and wheat germ. Derivatives of this vitamin are directly involved in the synthesis of nucleic acids; for this reason cells in the body that are subject to rapid synthesis and destruction are especially sensitive to folic acid deprivation. For example, the retarded synthesis of blood cells in folic acid deficiency results in several forms of anemia, while failure to replace rapidly destroyed cells in the intestinal wall results in a disease called sprue.

Inadequate amounts of folic acid in the diet of pregnant women have been strongly associated with neural tube defects (i.e., spina bifida and anencephaly) in newborns; fortification of foods with adequate folic acid also reduces the risk of premature birth.

A U.S. study published in 1998 involving 80,000 women showed significant reduction of heart disease among those whose diets included adequate amounts of folate and vitamin B6.

Folic acid keeps cells splitting and DNA synthesizing, and boosts homocysteine metabolism.

Since folate deficiency in the first trimester of pregnancy may cause birth defects women of childbearing age should take at least 800 mg of folic acid as a prophylactic measure. Extra folate also treats B12/folate-deficient (macrocytic) anemia, cervical dysplasia, and gingivitis, and helps prevent heart disease and osteoporosis.

Several chemical antagonists to the action of folic acid have been developed in the hope that they might inhibit the growth of rapidly dividing cancer cells; one such compound, methotrexate, drug used in halting the growth of actively proliferating tissues. Introduced in the 1950s, it is used in the treatment of leukemia, psoriasis, and non-Hodgkin's lymphoma.

It is also used to treat leukemia in children. The recommended daily dietary allowance for adults is 400 micrograms. Para-aminobenzoic acid (PABA), which is incorporated into the folic acid molecule, is sometimes listed separately as a B vitamin, although there is no evidence that it is essential to the diet of humans.

Folic Acid is found in leafy vegetables, fruits, fish, eggs, whole grain cereals and bread.

40 mg daily is best. Take folic acid always with B12, since too much folic acid can mask a B12 deficiency. An oral folic acid rinse is good for gums. Eat a diet with plenty of green leafy vegetables.

Vitamin B12

The molecular structure of vitamin B12 (cobalamin) is the most complex of all known vitamins. In 1973 the vitamin was reported to have been synthesized by organic chemists. Vitamin B12 and closely related cobalamins are necessary for folic acid to fulfill its role; both are involved in the synthesis of proteins. Feeding large amounts of liver to patients with pernicious anemia was noticed to cure them; the

curative substance in this case was probably vitamin B12. The therapy worked because the liver they fed their patients contained such large quantities of B12 and sufficient amounts of the vitamin were absorbed without the assistance of the intrinsic factor.

However, pernicious anemia in humans is caused not by a vitamin B12 deficiency in the diet but rather the absence of a substance called the intrinsic factor, ordinarily secreted by the stomach and responsible for facilitating the absorption of B12 from the intestine. When a person's body cannot produce the intrinsic factor, the standard treatment today is to inject vitamin B12 directly into the bloodstream.

Inadequate absorption of B12 causes pernicious anemia, nervous system degeneration, and amenorrhea. The only site of cobalamin synthesis in nature appears to be in microorganisms; neither animals nor higher plants are capable of making these vitamin B12 derivatives. Nevertheless, such animal tissues as the liver, kidney, and heart of ruminants contain relatively large quantities of vitamin B12; the vitamin stored in these organs was originally produced by the bacteria in the ruminant gut. Bivalves (clams or oysters), which siphon microorganisms from the sea, are also good sources. Plants, on the other hand, are poor sources of vitamin B12.

It helps cell production, nerve cell and immune function, energy metabolism, and homocysteine metabolism. For growth, red blood cells, nervous system, for detoxifying the body and a host of functions.

Short-term deficiency leads to megaloblastic anemia (treatable with a supplement); long-term shortfalls can mean brain damage. Symptoms of deficiency include extreme fatigue, get frequent colds, or you take the Pill, or drink a lot of alcohol.

A simple blood test can let you know if you are B12/folic acid anemic and need to supplement. Strict vegans should *always* take extra B12, since it exists only in animal foods (the form in fermented foods are not easily absorbed).

Found in animal foods only: meat, fish, poultry, eggs, and milk.

Maintenance dosage is at least 100 mg for vegetarians. If you are already deficient, take 2,000 mg per day for several months to re-establish normal levels. B12 injections are the best way to supplement.

Vitamin C

This is perhaps the most important vitamin required by the body and is involved in many critical functions in every organ and for sustaining life itself. It helps the body fight cancer and all the autoimmune diseases prevalent today. Some other functions are tooth and bone formation, healthy gums, collagen, immunity, and antioxidant. Unfortunately the human body cannot produce it and is totally dependant on the outside source. It is naturally found in citrus fruits, tomatoes, melons, green peppers, green leafy vegetables, fresh potatoes.

Vitamin C, or ascorbic acid, a water-soluble vitamin, was first isolated (from adrenal cortex, oranges, cabbage, and lemon juice) in the laboratories of American biochemists in the years 1928–33. Hungarian red pepper was also found to be an exceptionally rich source; citrus fruits and tomatoes are also excellent sources. Other good sources include berries, fresh green and yellow vegetables, and white potatoes and sweet potatoes.

The vitamin is readily oxidized and therefore is easily destroyed in cooking and during storage. All animals except humans, other primates, guinea pigs, and one bat and bird species are able to synthesize ascorbic acid.

Ascorbic acid is necessary for the synthesis of the body's cementing substances: bone matrix collagen, dentin, and cartilage. It is an antioxidant and is necessary to assist several metabolic processes.

Deficiency of vitamin C results in scurvy, deficiency disorder resulting from a lack of vitamin C (ascorbic acid) in the diet. Scurvy does not occur in most animals because they can synthesize their own vitamin C. The symptoms of which are largely related to inadequate collagen synthesis and defective formation of intercellular materials. Ascorbic acid is metabolized slowly in humans, and symptoms of scurvy are usually not seen for three or four months in the absence of any dietary vitamin C.

Vitamin C fights free radicals, immune-enhances, stimulates adrenals, detoxifies, and acts as anti-histamine. It also helps make collagen, the protein that literally holds the body together. It will boost immunity. Vitamin C is recommended for infections, stress, allergies, asthma, cervical dysplasia, infertility, autoimmune disorders, diabetes, hepatitis, herpes, periodontal disease, heart disease, and cancer. Take extra C when you are injured, to speed healing.

The use of megadoses of ascorbic acid to prevent common colds, stress, mental illness, cancer, and heart disease is a continuing subject of research. For general health, 500-3,000 mg of ascorbic acid is a good start, though a therapeutic dose is just below 'bowel tolerance' – the amount which causes diarrhea.

Take the about 10- 30 grams vitamin C as sodium ascorbate dissolved in one liter water (ionic form) and sip it over a long period for best effect. The oral route rather than as tablets or lozenges for ensures better take up.

It is advisable to take mega doses through supplements. IV/IM routes should be used in emergencies only or when the patient cannot drink water for any reason.

This is a safe vitamin and be assured that it is virtually impossible to overdose on it.

Vitamin D

Vitamin D is a name given to two fat-soluble compounds; calciferol (vitamin D2) and cholecalciferol (vitamin D3). They are now known to be hormones, but continue to be grouped with vitamins because of historical misclassification.

This vitamin is involved with the formation of bones, teeth and cartilage; aids absorption of calcium and phosphorus, helps in fight against Cancer, Alzheimer's and many other diseases.

Vitamin D3 plays an essential role in the metabolism of calcium and phosphorus in the body and prevents rickets, a bone disease caused by a deficiency of vitamin D or calcium in children. Rickets is usually caused by a lack of exposure to sunlight rather than a dietary deficiency, although dietary deficiencies can result from

malabsorption in the small intestine caused by conditions such as sprue or colitis. Rickets can be prevented and its course halted by the intake of vitamin D2 (found in irradiated yeast and used in some commercial preparations of the vitamin) or vitamin D3 (found in fish liver oils and in fortified milk).

Butter and egg yolks, liver or cod-liver oil and cold-water fish, including salmon and sardines are rich food sources. A plentiful supply of 7-dehydrocholesterol, the precursor of vitamin D3, exists in human skin and needs only to be activated by a moderate amount of ultraviolet light (less than a half hour of sunlight) to become fully potent.

Symptoms of vitamin D deficiency in children include bowlegs, knock knees, and more severe (often crippling) deformations of the bones. In adults deficiency results in osteomalacia, characterized by a softening of the bones. It builds bones and also helps prevent osteoporosis. Vitamin D should be part of a bone-support supplement. Take extra in the winter months, when there's less sunlight. It fights breast and colon cancer.

Excessive vitamin D consumption can result in toxicity. Symptoms include nausea, loss of appetite, kidney damage, and deposits of insoluble calcium salts in certain tissues.

The recommended daily dietary allowance for cholecalciferol is 5 to 10 micrograms (200 to 400 IU) depending upon age and the availability of sunlight.

Vitamin E

Vitamin E occurs in at least eight molecular forms (tocopherols or tocotrienols); in humans the most biologically active form has generally been considered to be alpha-tocopherol, which is also the most common. All forms exist as light yellow, viscous oils.

It is an antioxidant, protects unsaturated fats in cells from damage, it is advised for cardio, neuro and diabetic problems.

The best sources are vegetable oils. Other sources include green leafy vegetables, wheat germ, some nuts, and eggs.

It acts as a super-powerful antioxidant. It also offers major protection against heart disease by reducing ‘bad’ LDL cholesterol and increasing ‘good’ HDL cholesterol. Low levels of E are linked with cancer, diabetes, and reproductive problems. It is essential to normal reproduction in some animals, but there is no evidence that it plays a role in human reproduction.

Vitamin E is necessary for the maintenance of cell membranes. It is a potent antioxidant; numerous studies have pointed to a protective effect against arterial plaque buildup and cancer. It is helpful in the relief of intermittent claudication (calf pain) and in preventing problems peculiar to premature infants. It helps live with stress, pollution, and/or high-fat diet. Supplement to fight cancer, heart disease, stroke, and diarrhea, and to slow aging. Vitamin E also treats skin disorders, PMS, ulcers, hepatitis, infection, lupus, MS, AIDS, cervical dysplasia, and breast disease.

Dosage recommended is 100 I.U., or a therapeutic dose from 100-400 I.U. Natural d-alpha-tocopherol combined with tocotrienols is best. If you are taking blood-thinning medication, consult your doctor. In large doses, it has an anticoagulant effect.

Over dosing can lead to problems especially foot ‘dragging’ in the elderly who are kept on long term treatment. As this is a fat soluble vitamin it can build up and remain in the system for a long time. Synthetic sources should be avoided as far as possible to avoid toxicity.

Vitamin K

Vitamin K consists of substances that are essential for the clotting of blood. It was identified in 1934 by Danish biochemist Henrik Dam. Two types of K vitamins have been isolated: K1, an oil purified from alfalfa concentrates, and K2, synthesized by the normal intestinal bacteria. Both can be derived from the synthetic compound menadione (sometimes called vitamin K3), a yellow crystalline solid that is as potent in its ability to promote blood clotting, a process by which the blood coagulates to form solid masses, or clots. In minor injuries, small oval bodies called platelets, or thrombocytes, tend to collect and form plugs in blood vessel openings as the natural vitamins.

The best sources are liver, alfalfa, leafy green vegetables, such as broccoli cabbage and spinach, and intestinal bacteria (which produce most of the body's supply of vitamin K). It is therefore important to reestablish the gut flora after treatment with antibiotics or after severe diarrhea.

Vitamin K is required for the synthesis in the liver of several blood clotting factors, including prothrombin. Coumarin derivatives, which are used in medicine to prevent blood coagulation in certain cases, act by antagonizing the action of vitamin K.

In the deficiency state an abnormal length of time is needed for the blood to clot, and there may be hemorrhaging in various tissues. Deficiency occurs in hemorrhagic disease of the newborn infant, in liver damage, and in cases where the vitamin is not absorbed properly by the intestine. It can also occur in coumarin therapy or when normal intestinal bacteria are destroyed by extended antibiotic therapy. Vitamin K does not treat hemophilia. Deficiency is rarely of dietary origin. The estimated safe and adequate intake for adults is 70 to 140 micrograms.

It is hoped that this has expelled some myths and developed a better understanding as to the different uses and needs for vitamins. This is a very important area of human life and health; hence more efforts should be made to acquire information on this subject as a lot of vested interests are at play.

Choline and Inositol, the Lipotropic Factors

Choline and Inositol helps to burn fat. These Lipotropic factors unclog the liver, aiding fat metabolism, and they keep the brain humming. They help to lower cholesterol, lose weight, sharpen memory, and/or detox your liver.

Take the lipotropic supplement having 500 mg of Inositol (or phosphatidylinositol) and 1000 mg of choline (or phosphatidylcholine) 1-3 times per day.

Minerals

1. Calcium

This mineral helps to build bones and teeth, and prevents pre-eclampsia and hyper-tension during pregnancy and breastfeeding. Calcium citrate is the best form. Taking calcium carbonate is a waste of money.

It stops osteoporosis – the bone loss leading to ‘old ladies hump.’ Ideal dosage is 500- 1000 mg per day for middle aged women. If you are under 24, pregnant, or lactating, you should take 1,500 mg per day. For best effect combine calcium with magnesium, vitamin D, and trace minerals.

2. Magnesium

This mineral works with B6 to boost energy and enhance brain function, and builds strong bones. It has over 250 uses in the body. It should be taken from natural food sources rather than synthetic supplements for best effect.

It can ease PMS, high blood pressure, and/or general fatigue. It is good for pregnancy. Magnesium is also useful for muscle cramps, hypoglycemia, and heart rhythm disturbances, and to fight osteoporosis.

3. Iron

Iron is essential to life and is the chief transporter to keep oxygen moving, and boosts immunity. Low iron (anemia) is the most common nutrient deficiency in the world – resulting in fatigue, mental fuzziness, and disease susceptibility.

Iron overload can be very harmful and cause the many disease states. Taking iron in its natural ferrous state alone can help. Synthetic iron cannot be absorbed easily by the body and it can lead to intestinal disturbances at the very least.

The cause of anemia should be established clearly before any treatment is undertaken. Blood test should be performed to know the exact state of iron in the system.

Take iron *with* vitamin C, to enhance absorption – but *separately* from vitamin E, calcium and zinc, which make absorption tougher.

4. Zinc

Zinc heals wounds; boosts immune function, and help hormones function, ensure healthy pregnancy and breast-feeding. It plays a vital role in about 70 different activities within the system.

Zinc is depleted by alcohol, antibiotics, and the Pill, and some veggie diets are low in it. It is also useful for treating anorexia, bulimia, liver disease, and alcoholism.

Taking 40 mg a day can be useful under normal circumstances. For specific conditions, take up to 60 mg. Zinc should be taken with copper (in a ratio of 15 mg zinc: 1 mg copper) to prevent a zinc-induced copper-deficiency anemia.

5. Chromium

Chromium keeps blood sugar in check, fighting hypoglycemia and diabetes. Chromium also lowers cholesterol and triglycerides, and it can improve your lean muscle mass to body fat ratio, promoting weight loss.

Leading the modern lifestyle especially consuming highly refined and processed foods depletes chromium in the body. Supplement to prevent hypoglycemic, and reduce high cholesterol. Bodybuilders and other athletes who wish to increase muscle and shed fat must take chromium.

Chromium is freely available through food sources, which is the best form. Take 200-600 mg of chromium picolinate (the best form as supplement) daily.

6. Selenium

Like C, E, and the carotenes, selenium protects cell membranes from free radicals. Low levels are linked to cancer, infertility, cardiovascular disease, and cataracts.

It is a must for healthy conception, pregnancy and breastfeeding, and to prevent cancer, cardiovascular disease, and degenerative disease.

Selenium is freely available through food sources, which is the best form.

50-200 mg of selenium should be taken per day along with other antioxidants.

7. Trace Minerals (Iodine, Copper, Manganese, Boron, Silica, Vanadium, Molybdenum)

All these trace minerals are very vital for maintaining good health. They are especially required to build bones, cartilage, skin, teeth, hair, and nails. Iodine helps form thyroid hormone; molybdenum detoxifies the liver; copper helps you absorb iron and produce red blood cells; and boron balance hormones.

They are also required to prevent osteoporosis, among other things. You need trace minerals along with calcium and magnesium for strong bones. If you have hypothyroidism, you may need extra iodine. And take copper to correct iron-deficiency anemia or when supplementing with zinc.

As they are only required in traces, the best way is to depend on natural food sources. If supplementing is required, shop for a well balanced multi vitamin and mineral product from a reputed source.

Accessory nutrients

1. Essential Fatty Acids

These are 'essential' because the body cannot produce them in any form in house. They are of vital importance to prevent disease, by building cell membranes and nerve cells and forming hormone-like prostaglandins. The essential fatty acid (EFA's) includes linoleic acid (omega 6) and alpha – linoleic acid (omega 3) in the correct proportion. EFA- low diets are linked with chronic degenerative disease, including cancer, heart disease, and strokes.

The present trend of total avoidance of fats is very disturbing and actually responsible for most of the illness seen today. To stay healthy a healthy intake of these 'good' fats is an absolute must. EFA's help treat PMS, skin

disorders, high blood pressure, autoimmune disorders, and help to fight them effectively. Problems relating to aging in men and women can be addressed by parting taking essential fats in the proper manner.

A daily intake of about 100 ml of essential fats in any form and from natural sources by adults and half that amount by children is best. Avoid Tran's fat at any cost, by keeping away from processed and deep fried fat foods.

2. Bioflavonoid – Quercitin, Pycnogenol and Proanthocyanidins

They help to fight inflammation, prevent cancer, and act as anti-histamines, anti-virals, and antioxidants. They are also vital for health of collagen, blood vessels, and skin. They are required to prevent easy bruising, diabetes, cancer, heart disease, and viral infections like HIV and herpes. They act as general disease fighters, and keep allergies at bay.

Vegetables, fruits, nuts and dried fruits, sprouts, red wine and green tea are loaded with these in abundance. Supplements are only a second best choice.

Bromelain and Digestive Enzymes

They Boost digestion. Enzymes and bromelain (a plant enzyme from pineapple) help your body use the food you eat. Bromelain is also a powerful anti-inflammatory.

They are useful to treat an upset stomach, or are overweight, and/or want to reduce symptoms of indigestion. Bromelain also helps treat food allergies.

Taking 1-3 capsules about 30 minutes before the start of a meal will help relieve the symptoms.

3. Coenzyme Q10

It is an excellent energizer. Coenzyme Q10 produces ATP, the body's energy source, and protects against lipid peroxidation – a fancy phrase for the destruction of cell membranes.

Take it if you are fatigued, or you want to improve your workout. Co Q10 will enhance muscle performance and aerobic capacity, boosting energy. Also use it to treat heart disease, high blood pressure, and immune deficiency, and to help prevent cancer.

It is available in steamed or fried peanuts, and peanut butter. It is also present in other more expensive nuts. The synthetic forms are very expensive and not as effective.

4. Probiotics – Friendly Bacteria

Befriend your intestines. Good bacteria include lactobacillus, acidophilus, and bifidobacterium bifidum. Out-of-whack gut flora (the normal bacteria in the digestive system) can result in candida overgrowth, poor nutritional absorption, allergies, immune disorders, and colon cancer.

If you have just finished up a course of antibiotics, or you have recurring vaginal yeast infections, urinary tract infections, irritable bowel syndrome, ulcerative colitis, or allergies you need these friendly bacteria.

Yogurt or curd is the best source. Supplements are also available but use them only as a second choice.