



Vitamins A, D, K & Beta Carotene

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Literature Education Series On Dietary Supplements

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Vitamin A, D and K are three of the four fat soluble vitamins. The other one is vitamin E. Unlike water soluble vitamins which generally are not stored in the body (and only remain for a few hours), fat soluble vitamins are stored in the liver—and therefore remain in the body for longer periods of time. Since Beta Carotene can be converted into vitamin A it is included in this category; although there are significant differences between these substances, as you will soon read.

Vitamin A and Beta Carotene

Vitamin A is a fat soluble vitamin, and is also known as retinol. It helps maintain the health of all tissues, particularly the skin and mucous membranes (the protective goeey stuff that lines all potential entrances to the body and in the case of Vitamin A, the respiratory tract linings). Vitamin A is necessary for the formation and maintenance of tooth enamel and the health of gums. This nutrient is needed for bone growth and for the health of sexual glands. It is an antioxidant and promotes good thymus function, which is a stimulant to the immune system. Finally, vitamin A is essential for night vision. Due to its role in immune system health, infections of the respiratory tract (i.e., nasal passages), urinary tracts, abscesses in ears and mouth and general infections may indicate a lack of vitamin A. A more specific clue to vitamin A deficiency is the lack of ability to see well in dim light, particularly night blindness. Rough, dry,

scaly skin may also be an indication of a need for vitamin A. A condition known as Xerophthalmia, which is characterized by a lack of tears as well as swollen and pus-laden eyelids is a possible situation where vitamin A may be lacking. Reproductive difficulties (poor fertilization, abnormal embryonic growth) are also possibilities.

The types of things people might take extra vitamin A for include: poor night vision, itching eyes, gum disease, respiratory problems (asthma, bronchitis, emphysema), and skin problems (dry skin, eczema, psoriasis, acne).

I personally have a unique way of taking vitamin A. At the first sign of a cold coming on I will take a “one-time” 200,000 I.U. loading dose of vitamin A before initiating my cold killing program [discussed *The Nature Pharmacist's Vitamin Primer*]. Possible toxicity of vitamin A could occur if it were taken at high doses (e.g., 50-100,000 I.U. or more daily) for an extended period of time (e.g., many months). However, I have never heard of a toxic reaction occurring from a one-time 200,000 unit loading dose.

There is some controversy as to how much, if any, vitamin A pregnant women should take. If you are pregnant, either follow the guidance of your doctor or use a prenatal supplement that contains beta carotene instead of vitamin A. On the other side of the coin, if you are a diabetic do not rely on supplements that substitute beta carotene for vitamin A. Diabetics do not convert beta carotene to vitamin A like the rest of the population does. I suggest you seek a multi-vitamin that has at least 5000 I.U. of vitamin A, or purchase a bottle of vitamin A 10,000 I.U. (I like the dry form) and take one tablet daily with your other vitamins.

Beta carotene

Beta carotene and its cousins, collectively referred to as carotenoids, are the phytonutrients that give fruits and vegetables their distinctive orange, yellow and red colors. Green leafy vegetables are also high in carotenoids but the color is masked by the green of chlorophyll. Hundreds of carotenoids have been identified including alpha carotene, lutein, lycopene, cryptoxanthin and zeaxanthin.

Beta carotene is provitamin A, which means that it can be converted to A if necessary, but unlike Vitamin A, is water soluble, and for many years it was considered only on this basis. However, it is also a potent antioxidant in its own right and subsequent research suggests that carotenoids as a family offer an array of health benefits beyond that of just beta carotene, such as lowering the risk for heart disease and certain types of cancer as well as enhancing the immune system and protecting us from age-related macular degeneration, the leading cause of irreversible blindness among adults.

Vitamin D

Vitamin D is called "the sunshine vitamin" because the rays of the sun can convert a form of cholesterol derivative under the surface of the skin into vitamin D. It promotes healthy bones and teeth by regulating the absorption and balance of calcium and phosphorus from the digestive tract. It is necessary for normal muscle contraction and nerve function in addition to helping the formation of specific forms of ribonucleic acid (RNA) and enzymes.

Vitamin D prevents rickets, a disease of calcium-deprived bone that results in bowlegs, knock-knees, and other bone defects. Other deficiency symptoms include loss of appetite, nervousness, diarrhea, insomnia, muscle twitches, bone weakening, cramps, fatigue, and defective teeth.

Vitamin D supplements may help treat psoriasis and, based on preliminary research and speculation, slow or even reverse some cancers such as prostate, colon, breast, and myeloid leukemia.

Vitamin K

Vitamin K is needed in a small but critical amount to form essential proteins for blood clotting, and also for kidney function and bone

metabolism. Bacteria living in the intestines produce about half the body's needs of vitamin K, but the rest must come from the diet. Vitamin K also appears to help bones retain calcium.

Vitamin K deficiency is rare in adults but deficiency symptoms include delayed blood clotting, internal bleeding, subcutaneous hemorrhage, and calcium depletion from bones.

Therapeutic uses include excessive bleeding, and applying topically for spider veins.



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