



# VITAMIN E AND YOUR HEALTH

Vitamins are organic molecules that are necessary for normal metabolism, growth, development and regulation of cell function in animals. They are not usually produced in the body; however, on the rare occasions that they are produced the quantity is insufficient for proper bodily function. Consequently they must be obtained from dietary sources. In this issue of *Nyam News* we will look at the functions of vitamin E in the body and how we can get the right amount of this vitamin.

Vitamin E belongs to the group of fat-soluble vitamins. Like other fat-soluble vitamins, it dissolves and remains in the fatty tissues of the body thereby reducing the need to ingest large quantities. Vitamin E is, in fact, a term for a mixture of eight compounds, which can be classified into two sub-groups –

the *tocopherols* – beta, alpha, gamma and delta and the *tocotrienols* – beta, alpha, gamma and delta. The most common and most active of these in the body is alpha-tocopherol ( $\alpha$ -*tocopherol*). Both alpha *tocopherol* and gamma ( $\gamma$ ) *tocopherol* are commonly found in food.

## Will Vitamin E Help Me Live Longer?

Human beings need oxygen in order to survive. Oxygen, however, has the potential to become hazardous in the body in cases where it makes molecules overly reactive. When oxygen-containing molecules become too reactive, they can start damaging the cell structures around them, causing a state referred to as “oxidative stress”.

Antioxidants in the body neutralize harmful substances called free radicals. Free radicals are atoms that are very reactive and are thought to contribute to the development of various health conditions such as cancer, heart disease and inflammatory conditions, for example arthritis. Vitamin E functions as an antioxidant, and helps prevent oxidative stress by working together with other food substances such as vitamin C, glutathione, selenium and vitamin B<sub>3</sub> in an attempt to regulate the overactive molecules.

Vitamin E has been described as the “lightning rod” of the cell – it has the ability to draw the energy from free radicals to itself, without causing damage. Studies have shown that vitamin E protects the skin from ultraviolet radiation (UV

light) when applied externally (to the skin). A diet rich in vitamin E will stimulate the cell membrane to exert a protective effect on the skin. Because of its role in maintenance and protection of the skin and membranes, you will find many manufacturers including vitamin E in creams, lotions and ointments for skin care. However, claims that topical vitamin E reduces scar tissue formation are unproven. In fact, in some studies use of vitamin E worsened the appearance of scars and it sometimes led to development of contact dermatitis.

The role of vitamin E in the prevention of hypertension and cardiovascular disease has been studied. In some of these studies, vitamin E appeared to help prevent the formation of blood clots, and so prevent heart attack. Additionally, vitamin E may help prevent heart disease by its action in reducing oxidative stress, and for this reason also it may play a role in prevention of some cancers. It is thought to also prevent cancer by blocking the formation of nitrosamines which are cancer-causing substances formed from nitrates in the diet.

Vitamin E protects and ensures permeability of the capillary system, protects vitamin A and essential fatty acids from oxidation in the cells and prevents breakdown of body tissues. Other functions of vitamin E are in stimulating the body's immune response, and some studies suggest a protective effect against cataracts.

### Too little or too much ...

Studies indicate that deficiency of vitamin E can result from digestive system problems such as inflammation of the pancreas, gallbladder disease, coeliac disease and cystic fibrosis, as well as the malabsorption of dietary fat due to an inability to secrete bile or with rare disorders of fat metabolism. Deficiency may also occur with rare genetic abnormalities in the alpha-tocopherol transfer protein. Low birth weight of infants (birth weights less than 1500 grams, or 3 pounds and 4 ounces) are also at risk of deficiency. Women with severe deficiency may experience frequent miscarriages as well as give birth prematurely. The role of the vitamin in reproductive health led to the nickname of "anti-sterility vitamin". Deficiency also leads to nerve degeneration in the hands and feet.

Supplementation with too much Vitamin E (more than 1,500 International Units [IU] or 1000 milligrams) on the other hand may interfere with the action of vitamin K and enhance the effects of some anticoagulation drugs, as Vitamin K aids in blood formation which stops bleeding. However, even in much less amounts, high doses of vitamin E taken daily over a long period has been found to increase the risk of death.

### Sources of Vitamin E

Vitamin E is primarily derived from plant sources. Humans access this important vitamin by consuming plant products, or selected animal sources that have their vitamin E stored in their liver. Table 1 provides a list of food sources of Vitamin E.

**Table 1: List of Food Sources of Vitamin E**

Food	Serving Size	Milligrams
Almond Oil	1 tablespoon	5.3
Corn Oil	1 tablespoon	1.9
Cottonseed Oil	1 tablespoon	4.8
Olive Oil	1 tablespoon	1.6
Palm Oil	1 tablespoon	2.6
Peanut Oil	1 tablespoon	1.6
Soybean Oil	1 tablespoon	1.5
Sunflower Oil	1 tablespoon	6.1
Vegetable-oil Spray	2.5 second spray	0.5
Wheat-germ Oil	1 tablespoon	20.3
Tomato Juice	6 fluid ounces	0.4
Tomato, Ripe	1 cup	0.7
Apple with skin	1 medium	0.8
Mango, raw	1 medium	2.3
Macaroni pasta, enriched	1 cup	1.0
Spaghetti pasta, enriched	1 cup	1.0
Almonds, dried	1 ounce	6.7
Hazelnuts, dried	1 ounce	6.7
Peanut Butter	1 tablespoon	3

**Table 1: List of Food Sources of Vitamin E (cont'd)**

Food	Serving Size	Milligrams
Peanuts, dried	1 ounce	2.6
Pistachio nuts, dried	1 ounce	1.5
Walnuts, English	1 ounce	0.7
Margarine	1 tablespoon	8
Mayonnaise	1 tablespoon	11
Avocado	1 medium	2.3
Spinach, raw	½ cup	0.5
Sweet Potato	1 medium	5.9
Tomato, red, raw	1 tomato	0.4
Turnip greens, raw	½ cup chopped	0.6
Papaya	1 each	3.4
Bell Pepper, slices	1 cup	0.6
Egg, whole, fresh	1 large	0.9

**Table 2: Recommend Dietary Allowances for Vitamin E for Children and Adults**

Age (years)	Male (mg/day)	Female (mg/day)
0.6 months	3 mg (4.5 IU)	3 mg (4.5 IU)
7-11 months	4 mg (6 IU)	4 mg (6 IU)
1-3 years	6 mg (9 IU)	6 mg (9 IU)
4-6 years	7 mg (10.5 IU)	7 mg (10.5 IU)
7-9 years	10 mg (15 IU)	10 mg (15 IU)
10 and up	10 mg (15 IU)	8 mg (12 IU)
Pregnancy	–	10 mg (15 IU)
Lactation: 0-6 months after pregnancy	–	12 mg (18 IU)
Lactation: > 6 months after pregnancy	–	11 mg (16.5 IU)

### Do We Get Enough?

Table 2 provides a list of the Recommended Dietary Allowances (RDA) for vitamin E in the Caribbean. The RDA is the average daily dietary intake level that is sufficient to meet the nutrient requirements of nearly all healthy individuals in each life-stage and gender group.

### Having a Healthy Vitamin E Diet

Nutritionists constantly promote having a balanced diet. A balanced diet entails having food from all six food groups in the recommended proportion, and this will be a major source of the nutrients and other food constituents needed for good health. One can not go wrong with this principle unless you have a preexisting medical issue. It is recommended that we get all our vitamin E from food. Many people are rightly concerned with their fat intake and the effect that it will have on their health, but remember that the body needs some fat, and that fats and oils are often good sources of vitamin E. Persons on low fat diets may need to be concerned about their vitamin E intakes. Choose healthier sources of fat, such as oils, seeds and nuts which contain vitamin E. ♦

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