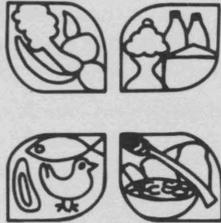


FACT SHEET

7-22-76
CK
20m

L-1441



VITAMIN E

Sally Coble*

It prevents old age. Improves deodorant protection. Helps cure heart disease, diabetes, ulcers and varicose veins. Prevents sterility. Vitamin E is the magic cure-all.

These and numerous other claims for vitamin E have been made during recent years, increasing sales and giving people false hopes that the end to their troubles is only a vitamin E tablet away.

Much remains to be known about the mysterious vitamin E. Perhaps this is one reason there is so much speculation as to its properties and functions. An understanding of vitamin E is further complicated because a variety of other nutrients are capable of performing some, but not all, functions of the vitamin, and in some, but not all, species.

Nutrient Functions in Body

Vitamin E was identified as an essential nutrient more than 50 years ago when it was found that rats deprived of the vitamin showed reproductive failure and disorders. Because of the relationship between vitamin E and the rat's offspring, the vitamin was named tocopherol from the Greek words meaning, "to bear child." As a result of this research, vitamin E has often been referred to as the anti-sterility vitamin, and perhaps given credit for some real and imagined functions in human beings. However, this function in man has not been proven conclusive by research data.

Vitamin E is a fat-soluble vitamin, as are vitamins A, D and K.

The most important function of vitamin E is as an antioxidant — a substance which combines readily with oxygen. Antioxidants thereby decrease oxygen available to other substances that may be destroyed or changed undesirably by the uptake of oxygen. All cells are composed of fat-like material in addition to protein and other substances. Groups of cells form

tissues. Vitamin E helps maintain the integrity and structure of cells and tissues. If antioxidants were not present, changes in the structure of tissues, chemically known as peroxidation, could alter their specific functions. Vitamin E similarly protects vitamin A from destruction.

At least two other functions of this vitamin have been identified. Vitamin E is necessary for the synthesis and production of red blood cells. In addition, vitamin E is necessary in the process whereby carbohydrates and fats are chemically broken down to produce energy.

Commercially, vitamin E is added to fats and oils to prevent oxidation or rancidity resulting in undesirable flavor changes. Although vitamin E is found naturally among many oils, the refining process often destroys or decreases the vitamin content. Other antioxidants often are added to commercial preparations.

Provided in Normal Diet

The daily requirement of vitamin E, as determined by the Foods and Nutrition Board of the National Research Council — National Academy of Sciences, can be met through an ordinary varied diet. The Recommended Daily Allowance — the amount recommended for the average healthy American — is 12 International Units for women and 15 International Units for men. One International Unit is approximately equal to 1 milligram vitamin E (see Table 1).

Prevails in Most Foods

Vitamin E is unique among all the vitamins in that it is widespread in nature and is prevalent in most of the foods we eat. It is found in large concentration in cereal seed oils with wheat germ being the best natural source. The vitamin E content of oils depends upon the source of the oil, whether or not it was hydrogenated and storage conditions. Dark green leafy vegetables, nuts and legumes are other good

*Foods and Nutrition Specialist, Texas Agricultural Extension Service, The Texas A&M University System.

sources of the vitamin, whereas animal sources are poor.

Table 1 shows the vitamin E content of some selected foods. Approximately two-thirds of the vitamin E in the typical American diet comes from salad oils, shortening and margarines; 11 percent from fruits and vegetables; and 7 percent from grain products. There is little possibility of a deficiency in the American diet unless there is limited choice and the individual's absorptive mechanisms are faulty.

Most modern cooking procedures do not alter the vitamin E content of foods. However, the long-continued high heat of deep fat frying destroys the vitamin. Long-term freezer storage is also responsible for some vitamin E losses caused by oxidation.

Deficiencies Rarely Noted

Deficiencies of vitamin E are rarely seen in adults, except experimentally. On the other hand, vitamin E deficiency in infants, particularly premature ones, has been found. Reports of hemolysis or breakdown of the red blood cell, increased capillary fragility and specific types of anemia have been found among infants with low blood levels of vitamin E.

Although not conclusive, the general feeling is that there is little transfer of vitamin E to the fetus during the last trimester of pregnancy. Thus, infants are born with relatively low blood levels of the vitamin. Human milk provides an ample supply of vitamin E, but cow's milk is a poor source. Studies have indicated that breast-fed infants reach normal blood levels of vitamin E faster than babies fed cow's milk, unless supplemental vitamins are administered when feeding cow's milk.

Much more research and conclusive findings have been found among experiments with animals. Vitamin E deficiency in animal species has been reported to result in muscular dystrophy, fetus resorption, sterility, pigmentation related to the aging process and liver necrosis. However, there has not been any conclusive evidence that vitamin E can be used successfully in the treatment of these diseases in humans.

Vitamin E plays an important role at the cellular level. Any further role — as in treating cancer, protecting against pollution and stimulating virility — has not yet been proven. These hopes, however, have led recently to self-medication and overdoses, the effects of which have not yet been determined. Vitamin E is a fascinating nutrient, with a mysterious future all its own.

Table 1. Vitamin E Content of 100 Grams of Some Foods

Food	Measure* (Approximately 100 grams)	Vitamin E Content (milligrams)
Mayonnaise	7 tbsp	50
Margarine (corn oil)	½ cup	46.7
Yellow cornmeal	¾ cup	3.4
Whole wheat bread	4 slices	2.2
Beef liver, broiled	3½ oz	1.62
Egg	2	1.43
Fillet of haddock, broiled	4 oz	1.20
Butter	½ cup	1.0
Tomato, fresh	½ medium	0.85
Green peas, frozen	⅔ cup	0.65
Ground beef	3½ oz	0.63
Pork chops, pan-fried	3½ oz	0.60
Chicken breast	3½ oz	0.58
Cornflakes	4 cups	0.43
Banana	⅔ medium	0.42
White bread	4 slices	0.23
Carrots	2	0.21
Orange juice, fresh	less than ½ cup	0.20
Potato, baked	1 medium	0.055

Measures are approximate.

Adapted from: Bunnell, R. H., Keating, T., Quaresimo, A., and Parmin, G. K., Alpha-Tocopherol Content of Foods, *AMERICAN JOURNAL OF CLINICAL NUTRITION*, 17:1, 1965.

Educational programs conducted by the Texas Agricultural Extension Service serve people of all ages, regardless of socio-economic levels, race, color, sex, religion or national origin.

Cooperative Extension Work in Agriculture and Home Economics, The Texas A&M University System and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8, 1914, as amended, and June 30, 1914.
20M—6-76, Revision