Supplementation of Human Diets With Vitamin E (1973)

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SUPPLEMENTATION OF HUMAN DIETS WITH VITAMIN E

A Statement of the

FOOD AND NUTRITION BOARD

DIVISION OF BIOLOGY AND AGRICULTURE

NATIONAL RESEARCH COUNCIL

(Prepared by the Committee on Nutritional Misinformation)

NATIONAL ACADEMY OF SCIENCES

June, 1973

NOTICE

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The members of the committee selected to undertake this project and prepare this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. Responsibility for the detailed aspects of this report rests with that committee.

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Advocates of vitamin E supplementation in human beings overlook the fact that an effect on reproduction in animals can be demonstrated only when the animals have been fed for long periods on diets free of vitamin E. The widespread presence of the vitamin in human diets has prevented a deficiency, such as seen in animals under experimental condition, from developing in man.

In most animal species that have been studied, severe vitamin E deficiency causes muscle wasting or dystrophy. Understandably, vitamin E has therefore been tested as a treatment for various muscle diseases of man, including hereditary muscular dystrophy. Again, results have been negative. The muscles of persons with dystrophy contain normal amounts of vitamin E, and there is no evidence that the condition in man is associated with a dietary deficiency of this vitamin.

Abnormalities in the heart muscle of vitamin E-deficient animals are less common and less severe than those seen in the skeletal muscle. In cattle and sheep, however, heart-muscle abnormalities can be severe, whereas severely deficient monkeys with skeletal dystrophy and bone-marrow failure have shown no cardiac involvement. Similarly, there is no evidence that cardiac disease is a consequence of vitamin E deficiency in man and, to date, extensive tests have failed to demonstrate therapeutic benefit from supplemental vitamin E.

Why has supplemental vitamin E been so ineffective in treatment of disease? Clearly, it is because the reproductive failure, heart disease, and muscular dystrophy observed in man are not attributable to dietary deficiency of this vitamin. Likewise, there is no satisfactory

scientific or clinical evidence that supplemental dietary vitamin E is beneficial in the treatment of such other conditions as burns, skin disorders, poor physical performance, and cancer.

Surveys of the United States population indicate that adequate amounts of vitamin E are supplied by the usual diet. The recommended daily dietary allowances of this vitamin range from 5 to 30 international units, depending upon age, sex, and physiologic state, and are deemed to exceed the actual needs of most individuals. Dietary vitamin E is supplied in substantial amounts by most vegetable oils as well as by margarine and shortening made from these oils, and significant inputs are made by many vegetables and by whole-grain cereals. Meats, fish, poultry, milk, eggs, legumes, fruits, and nuts also contribute to the dietary supply. Thus, supplementation of the diet with vitamin E is unlikely to be useful in alleviating any of the ailments mentioned above.

Are there any special cases in which supplementary vitamin E is beneficial? Some physicians prescribe vitamin E for premature infants, who frequently have low blood levels of the vitamin because of limited transfer from the mother's blood before birth. Patients afflicted with conditions that interfere with normal digestion or absorption of fats and fat-soluble vitamins require supplements of these vitamins, one of which is vitamin E. Such individuals should be under the care of a physician; for others vitamin E supplements are unnecessary. Self medication with vitamin E in the hope that a more or less serious condition will be alleviated may indeed be hazardous, especially when appropriate diagnosis and treatment may thereby be delayed or avoided.

Summary

Misleading claims that vitamin E supplementation of the ordinary diet will cure or prevent such human ailments as sterility, lack of virility, abnormal termination of pregnancy, heart disease, muscular weakness, cancer, ulcers, skin disorders, and burns, are not backed by sound experimentation or clinical observations. Some of these claims are based upon deficiency symptoms observed in other species. Careful studies over a period of many years attempting to relate these symptoms to vitamin E deficiency in human beings have been unproductive. The wide distribution of vitamin E in vegetable oils, cereal grains, and animal fats makes a deficiency in humans very unlikely. Premature infants or individuals with impaired absorption of fats may require supplemental vitamin E, but they should, in any event, be under the care of a physician.

References

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