

Vitamin E

Vitamin E is a fat-soluble vitamin, essential for health. Working with other essential nutrients, depending on the function concerned, vitamin E in recommended daily amounts:

- Acts as an antioxidant
- Helps to protect essential fats from oxidation inside the body
- Helps to maintain the integrity of body cells
- Helps to maintain the health of the cardiovascular system, including the blood cells, blood vessels, the heart and the blood.
- Helps in the formation of red blood cells
- Helps to maintain healthy platelets (a type of blood cell)
- Helps to maintain appropriate blood flow through the blood vessels
- Helps to maintain the health of the immune system
- Helps to maintain an appropriate balance of anti-inflammatory and inflammatory substances in the body
- Helps to regulate the action of substances that send signals between cells
- Helps the body to use vitamin K

The main role of vitamin E is its antioxidant properties.¹ It protects body cells from toxic compounds, heavy metals, such as lead and cadmium, and also from the effects of drugs, radiation and free radical damage. It works in fats and oils which makes it complementary to vitamin C which fights free radicals dissolved in water. Free radicals can harm cells, tissues and organs.

As an antioxidant, vitamin E helps to protect the fats in low density lipoproteins (LDLs).² Lipoproteins are substances that transport fat and protein through the bloodstream. LDLs specifically transport cholesterol in the blood. If oxidised, LDLs deposit cholesterol in the blood vessels so causing build up of fat and damage to blood vessels. If LDLs are not oxidised, this helps to maintain the health of the blood vessels.

¹ Traber MG. Vitamin E. In: Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ, eds. *Modern Nutrition in Health and Disease*. Philadelphia: Lippincott Williams & Wilkins; 2006:396-411.

² Mustacich DJ, Bruno RS, Traber MG. Vitamin E. *Vitam Horm*. 2007;76:1-21

Vitamin E makes an important contribution to the health of the heart, blood and blood vessels.³⁴ It helps to maintain the blood at an appropriate consistency – not too sticky – by an action on platelets which are one type of blood cell. Vitamin E also helps in the formation of red blood cells. All of these effects help to maintain appropriate blood flow in the circulation.

Vitamin E has several functions not directly related to its antioxidant activity.⁵ Thus it has an effect on the activity of substances such as proteins and enzymes that work in immune and inflammatory cells.⁶ This action helps to maintain the health of the body's immune and inflammatory systems.

Vitamin E also helps to regulate the activity of some of the substances in the body that send signals between cells. This is another function of vitamin E that helps to maintain the health of the body's cells.

Low and marginal intakes of vitamin E are not uncommon in the British population. There is no Reference Nutrient Intake in the UK for vitamin E but the EU Recommended Daily Amount is 10mg daily. In the National Diet and Nutrition Survey (NDNS) in British adults aged 19-64 years, 47% of men overall and 67% of women overall had a vitamin E intake below 10mg daily. In the 19-24 year olds, these figures increased to 60% of men and 76% of women.⁷

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³ Traber MG. Vitamin E. In: Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ, eds. *Modern Nutrition in Health and Disease*. Philadelphia: Lippincott Williams & Wilkins; 2006:396-411

⁴ Ball GFM. Vitamin E. In: *Vitamins. Their Role in the Human Body*. Blackwell Publishing, 2004;234-255.

⁵ Zingg JM, Azzi A. Non antioxidant activities of vitamin E. *Curr Med Chem*. 2004;11(9):1113-33.

⁶ Traber MG. Vitamin E regulatory mechanisms. *Annu Rev Nutr*. 2007;27:347-362

⁷ The National Diet and Nutrition Survey: adults aged 19 to 64 years. Volume 3. Vitamin and mineral intake and urinary analysis. London: Stationery Office, 2003