Vitamin K Encyclopedia Article

Vitamin K

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Vitamin K

A major function of vitamin K is to promote the formation of prothrombin and other blood -clotting proteins in the liver. Because of this function, a deficiency in the vitamin leads both to a slowdown in the clotting process and the strong possibility of a hemorrhage.

Discovery of the vitamin began in 1929 when a Danish biochemist, Carl Dam (1895-1976), noticed that his laboratory hens suddenly had begun developing small hemorrhages under the skin and within the muscles. Because the hemorrhages resembled those seen in scurvy, Dam first added lemon juice to his hens' diet. When that failed to stop their bleeding, he tried all the food additives that other investigators, starting with Christiaan Eijkman, had found useful in correcting vitamin deficiencies. None of them worked, either.

Thoroughly baffled, Dam concluded that an as-yet unknown vitamin must be involved. And since the mysterious vitamin appeared to be essential for normal clotting--or coagulation--of the blood, Dam named it vitamin K, for Koagulation (the German spelling).

Intrigued by the thought of a new and potentially useful vitamin, others took up the challenge. Within a few years, several biochemists, in particular, an American group led by Edward Doisy (1893-1986), were able to isolate the vitamin from an extract of alfalfa. It proved to consist of two chemically similar yellowish oils known as K_1 and K_2. Doisy's group went on to work out the chemical constitution of both varieties and, because of this, Doisy shared with Dam the 1943 Nobel Prize in physiology or medicine.

Vitamin K deficiencies are relatively rare since the vitamin is not only widespread in plants but much of it is synthesized by the bacteria in a normal intestinal tract. However, antibiotics often destroy good bacteria as well as bad, so that patients on long-term drug therapy often may need vitamin K supplements in order to prevent bleeding problems.

Newborn infants often receive an intramuscular injection of vitamin K at birth to prevent hemorrhages, and the vitamin is also routinely added to infant formula. Newborns are particularly susceptible to vitamin K deficiency for two reasons--the vitamin does not pass easily from mother to fetus through the placenta and the baby is born with a sterile digestive tract. An infant can only begin to synthesize its own vitamin K several days after birth, when the digestive tract has acquired the necessary bacteria.