

Vitamin K

AT A GLANCE

Introduction

Vitamin K is a fat-soluble vitamin that occurs naturally in two forms: vitamin K1 (phylloquinone) is found in plants; vitamin K2 is the term for a group of compounds called 'menaquinones,' which can be found mainly in dairy products.

Vitamin K is best known for its role in helping blood to clot ('coagulate') properly. The 'K' comes from its German name, 'Koagulationsvitamin'.

Health Functions

A sufficient intake of vitamin K is important as it helps the body to

- clot blood ('coagulate'),
- maintain bone health,
- keep blood vessels functioning properly.

The European Food Safety Authority (EFSA), which provides scientific advice to assist policy makers, has confirmed that clear health benefits have been established for the dietary intake of vitamin K in contributing to:

- maintenance of normal bone;
- normal blood coagulation.

Disease Risk Reduction

Osteoporosis

Vitamin K is needed for proper use of calcium in bones. Higher vitamin K intake has been associated with greater bone density, while low vitamin K intake has been found in elderly individuals with osteoporosis.

There is increasing evidence that vitamin K improves bone health and reduces risk of bone fractures, particularly in postmenopausal women who are at risk for osteoporosis.

In addition, studies of other groups (e.g., male and female athletes) have also shown bone-enhancing benefits from vitamin K supplements.

Further investigations are needed to clarify vitamin K's benefits for bone health.

Atherosclerosis

The buildup of fatty material ('plaques') within blood vessel walls leads to atherosclerosis. As the condition progresses, incorporation of calcium ('calcification') into atherosclerotic plaques occurs, resulting in

decreased elasticity of the affected vessels and increased risk of blood clot formation, the usual cause of a heart attack or stroke.

A population study found that postmenopausal women with blood vessel calcifications had lower vitamin K intakes than those without calcifications.

Further studies are necessary to evaluate the emerging potential of vitamin K in inhibiting calcification of vessels.

Bleeding

Babies are born without any bacteria in their intestines and do not get enough vitamin K from breast milk to tide them over until their bodies are able to make it. Therefore, in many European countries and the United

States, all newborns receive vitamin K just after delivery to prevent the possibility of hemorrhagic disease (particularly in the brain).

Intake Recommendations

European health authorities set the adequate intake levels for phylloquinone at 70 micrograms (mcg)/day for all adults. In Germany, Austria and Switzerland, an intake of 70 mcg vitamin K per day for men and 60 mcg per day for women has been recommended. In the United States, an adequate intake level for adults of 120 micrograms (mcg) vitamin K per day for men and 90 mcg/day for women has been established.

Supply Situation

In most countries, the estimated average vitamin K intake meets the recommended values.

As newborn infants have a well established risk of vitamin K deficiency, in many countries vitamin K is routinely administered prophylactically to all newborns.

Deficiency

Vitamin K deficiency in the general population is relatively uncommon and is not a major health problem. Circumstances that may lead to vitamin K deficiency include health problems that can prevent the absorption of vitamin K (e.g., gastrointestinal disorders such as fat malabsorption, liver disease, gallbladder or biliary disease or Crohn's disease). In addition, the use of oral blood-thinning medications and some antibiotics can interfere with vitamin K.

Vitamin K deficiency can lead to excessive bleeding ('hemorrhage'), which may begin as blood oozing from the gums or nose.

In particular, the vulnerable population group of newborn infants has a well-established risk of vitamin K deficiency, which may result in bleeding within the skull in the first weeks of life. Breast-fed infants in particular have a low vitamin K status because placental transfer of vitamin K is poor and human milk contains low levels of vitamin K. Therefore, in many countries vitamin K is routinely (!) administered prophylactically to all newborns.

Sources

The best dietary sources of vitamin K1 are green leafy vegetables such as spinach, broccoli, Brussels sprouts, cabbage and lettuce. Other rich sources are certain vegetable oils. Good sources include oats, potatoes, tomatoes, asparagus and butter. Important sources of vitamin K2 are dairy products like cheese.

Safety

Even when large amounts of vitamin K1 and K2 are ingested over an extended period of time, no adverse effects have been observed.

Allergic reactions have been reported, however.

Drug interactions

Please note:

Because of the potential for interactions, dietary supplements should not be taken with medication without first talking to an experienced healthcare provider.

Authored by Dr Peter Engel in 2010, reviewed and updated by Dr Szabolcs Peter on 18.06.2017