Vitamin K: What’s it good for?

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Have you ever seen a bottle of vitamin K supplements in your natural-food store, pharmacy, or grocery store? Even though vitamin K is essential to life and quite safe in its natural forms, supplements of it are very hard to find. That’s probably because the vast majority of us have only a vague idea about what the vitamin can do—so there’s very little demand.

Most of us have heard that vitamin K has “something to do with blood clotting.” In fact, Drs. Henrik C.P. Dam (Denmark) and Edward A. Doisy (United States) were awarded the Nobel Prize in Medicine in 1943 for original research uncovering vitamin K’s functions in blood clotting. Since then, however, research has shown numerous other benefits, ranging from tooth decay to antiaging; you should consider what vitamin K can do for you.

Detecting a deficiency—signs are few

Each of us probably received just one deliberate “dosing” with vitamin K in our lifetimes, and that was shortly after birth to prevent “hemorrhagic disease” of the newborn. Since then, we’ve absorbed small amounts of vitamin K from our diets and elsewhere, but accumulating research says that for many of us, relying on dietary sources may not be enough.

Severe vitamin K deficiency causes uncontrollable bleeding, but mild to moderate degrees of such a deficiency don’t ordinarily cause obvious problems. There are two physical signs that indicate you might need vitamin K supplementation.

The first is easy bruising. While this can also be due to a lack of flavonoids (which help keep small blood vessels strong), it’s definitely safe and worth a try to use supplemental vitamin K (5 to 10 milligrams daily) to try to stop the problem. After six to eight weeks, it should be possible to tell whether vitamin K is helpful or not.

The second physical sign concerns women only. Many women have told me over the years that supplemental vitamin K totally eliminates menstrual clots, whether the clots are large and painful or only small and negligible. I’ve heard this so often that (unless proven otherwise) I’m assuming that any degree of menstrual clotting means insufficient vitamin K. Usually 5 to 15 milligrams daily will be enough to eliminate this clotting within two to three monthly cycles.

Although I’m aware of only these few physical signs of vitamin K deficiency, it’s quite possible that one or more of the conditions that follow are (at least in part) also signs of insufficiency for the individuals involved.

Fight tooth decay naturally

In 1948, Leonard Fosdick, Ph.D., of the Northwestern University School of Dentistry published research demonstrating that Vitamin K could prevent tooth decay.1 He had prepared chewing gum with and without vitamin K and asked an experimental group to chew the vitamin K gum after each meal. A carefully selected control group chewed gum without vitamin K. Dr. Fosdick reported: “It was found that the experimental group produced 60 percent to 90 percent fewer carious lesions than did similar control patients.”

Dr. Fosdick’s report was the eighth in a series starting in 1936. This series of publications carefully traced one major cause of dental caries to decalcification of tooth enamel and dentine by acid. He found that the decalcifying acids were produced by anaerobic metabolism (fermentation) of simple sugars and, to a small degree, starches.
In a 1942 publication, Dr. Fosdick pointed out that the enzymes involved in this acid production could be inhibited by silver nitrate, fluoride, and vitamin K.2 (If the acid-producing enzymes could be inhibited, he claimed, the reduction in acid production would be accompanied by less caries, as his subsequent 1948 research paper demonstrated.) Dr. Fosdick comments on these three methods:

• Silver nitrate: “The application of silver nitrate by dentists is another good example of the use of an enzyme poison. The main difficulty with this procedure is that it discolors the teeth. Nevertheless, there is widespread use of this method with more or less favorable results.”

• Fluoride: “Fluorides were one of the first-known inhibitors of the enzyme system necessary for acid production. In all probability, the application of this method of caries control may be quite successful. However, it is extremely hazardous to contaminate the drinking water of a large portion of our population without having more complete information concerning the toxic and obscure effects of long-continued ingestion of the fluoride ion.”

• Vitamin K: “Another substance that interferes with the [acid-forming] enzyme system is 2-methyl-1,4-napthoquinone [menadione, or vitamin K3], with certain derivatives. These substances seem to interfere with the enzyme system at one of the initial stages of the series of chemical reactions involved in the formation of acids. On this basis, it would be equal to or superior to the fluoride ion. Furthermore, preliminary experiments indicate that this material has a toxicity far less than that of the fluoride ion and may be ingested over long periods of time with no untoward result.” [Emphasis again added for the same obvious reasons.]

Although at present Dr. Fosdick’s vitamin K chewing gum is not available, Donal Carter, Ph.D., and I have formulated a dental spray containing vitamin K3 called DentaMist, which is available through Tahoma Clinic dispensary, (253)850-5661, www.tahoma-clinic.com, and Life Enhancement Products, (800)543-3873, www.life-enhancement.com.

**Nausea and vomiting during pregnancy**

Vitamin K (5 milligrams) and vitamin C (500 milligrams) taken simultaneously are a very effective but little-known treatment for nausea and vomiting during pregnancy. Though I’m not an obstetrician, I’ve observed success with this combination dozens of times.

As reported by Richard J. Merkel, M.D., 64 of 70 women (91 percent) who experienced nausea and vomiting during pregnancy were completely relieved of all symptoms within three days by simultaneous administration of vitamin K and vitamin C.3 (Dr. Merkel actually used only 25 milligrams of vitamin C with 5 milligrams of vitamin K, but these small doses are no longer available.) Three of Dr. Merkel’s patients were relieved of vomiting but not nausea, and only three (4.5 percent) were not helped at all. In “an advanced case of hyperemesis gravidarum (hyper-vomiting of pregnancy) in the second trimester and a case of pseudocyesis (pseudopregnancy), this medication appeared to be dramatically beneficial when other means of treatment had failed.” Dr. Merkel carefully noted that “in all cases the prothrombin time (a standard measure of vitamin K deficiency) and bleeding time were normal before and after medication.” He found that using vitamin K or vitamin C alone failed to give relief.

In his research, Dr. Merkel used menadione, the synthetic water-soluble form of vitamin K, which is safe in small doses. This water-soluble form doesn’t require any digestive aid. I’ve found that phylloquinone works nearly as well, especially if taken with a high-lipase digestive enzyme containing just a small amount of bile salts (often found in the pill with the enzyme). Phylloquinone and vitamin C are also available for (simultaneous) injection and work well that way. (For more information, see “Where to start and what to look for” below.)
**Chronic pain**

In 1955, researchers in Sarajevo reported on the effects of vitamin K injections on pain. They first determined that (in mice) vitamin K was more effective than morphine in its thermoanalgesic properties (relief of pain from burns). Then, they gave vitamin K injections to 115 individuals with chronic pain (due to terminal cancer) controllable only with morphine. Ninety-five of the 115 were able to eliminate morphine and rely on the vitamin K injections for pain relief.

At Tahoma Clinic, Davis Lamson, ND, and I tried this treatment and found it nearly as effective as did the original researchers. Unfortunately, the type of vitamin K used in the original research was discontinued by its manufacturer, so we were forced to switch to other types. We found the other available types effective in only 40-50 percent of the individuals who tried them. (However, when working with chronic pain, 40-50 percent is still a worthwhile number.)

Currently, we work with a preparation containing 30 milligrams of vitamin K (phytonadione form) per cc. Individuals learn to self-inject 20 to 30 milligrams intramuscularly each day for a two-week trial period. If it’s effective within that time, we have each individual adjust the dose and frequency according to what it takes to control pain adequately. (For example, a woman with severe rheumatoid-arthritis pain found that 30 milligrams (1 cc) every three to four days was just the right amount for her.) If it’s not effective within those two weeks, we discontinue.

**Reversing soft bones and hard arteries**

It’s been known for years that Vitamin K is important to healthy bones. It is essential to the final step in the activation of osteocalcin, a protein essential to normally calcifying bones. Women with fractured hips have been shown to have significantly lower vitamin K levels than women without fractures. A study of 16 individuals with osteoporosis found that serum vitamin K levels were only 35 percent of vitamin K levels in a non-osteoporotic group of the same age.

I’ve observed decreases in urinary calcium loss (as well as decreases in bone peptide loss) in women after they started taking vitamin K; lessening of urinary calcium excretion in women after menopause has also been reported by researchers. The vitamin is also of major importance in healing fractures; I’ve seen supposedly non-healing fractures recover completely once vitamin K treatment was started.

But isn’t it interesting that while vitamin K can help put calcium back where it belongs, into bones, it may simultaneously prevent calcium from depositing in arteries where it doesn’t belong? Japanese researchers reported that vitamin K2 had exactly this effect in studies involving experimental animals. Dutch researchers found that a group of 113 postmenopausal women with calcification of the aorta had reduced vitamin K levels. In a follow-up study, the same researchers reported that postmenopausal women with aortic calcification also had a significantly lower bone mass.

Although this evidence can’t be called at all conclusive, it certainly suggests the possibility that a major function (perhaps the main function) of vitamin K may be to keep calcium “in all the right places” and at the same time to prevent it from getting into the “wrong” ones. Vitamin K is the vitamin necessary to attach gamma-carboxyglutamic acid (an amino acid) to proteins. This attachment enables proteins to “grab, hold, and manipulate” calcium. Without vitamin K, this process doesn’t work optimally.

**Is vitamin K an anti-aging vitamin?**

It’s relatively well-known that as part of the aging process, calcium “leaks” from the bloodstream through cell membranes into the interior of cells, where (in excess) it interferes with the optimal functioning of intracellular metabolism. If vitamin K could somehow help reverse this process, by keeping calcium from leaking into the wrong places, it would be a major anti-aging nutrient. Terri Mitchell, a
contributor to Life Extension magazine, has just written an excellent general review of vitamin K in which the anti-aging question is addressed.12 Much more research is needed in this area.

Where to start and what to look for

As with most supplements, the first place to supplement with vitamin K is in our daily diet. The best sources of dietary vitamin K are green vegetables, especially kale (817 ppm, or parts per million); spinach (400 ppm); endive (231 ppm); broccoli (205 ppm); Brussels sprouts (177 ppm); cabbage (147 ppm); and lettuce (122 ppm). Soybean oil and canola oil (193 and 141 ppm) contain the largest amounts not found in green vegetables, with olive oil a distant third (49 ppm). Whole soybeans contain 47 ppm and avocados 40 ppm, but in general, grains, meats, fish, fruits, nuts, seeds, oils, and non-green vegetables (corn, beets, carrots, potatoes, tomatoes, etc.) contain very little vitamin K.

The natural, plant-synthesized dietary source of vitamin K is called phylloquinone, though it’s still frequently referred to as vitamin K1. Intestinal bacteria (including normal E. coli and Bacteroides species) also synthesize various forms of vitamin K, previously termed (as a group) vitamin K2 but now generally called menaquinones. Menadione, an entirely synthetic molecule with vitamin K activity, was developed in the 1940s and called (at the time) vitamin K3.

There’s usually much more of the menaquinones (vitamin K2) than phylloquinone (vitamin K1) found in our livers. Despite this, phylloquinone is the major active form of vitamin K used by our bodies—the menaquinones are not used as effectively. Menadione, being a synthetic molecule, is not normally found in our bodies except when deliberately supplemented.

Both phylloquinone and the menaquinones are fat-soluble and absorbed along with other dietary fats. Menadione (vitamin K3) is water-soluble. Phylloquinone has no known toxic effect; high doses of menadione, however, on rare occasions has caused hemolytic anemia (easily breaking blood cells) and liver toxicity. For this reason, menadione is not usually used when treating small children.

At present, supplemental sources of vitamin K are a bit hard to find. For many years, Standard Process Laboratories has made available Chlorophyll Complex, an all-natural plant concentrate containing a useful amount (1.1 milligrams) of vitamin K per capsule. Vitamin K Drops (2 milligrams per drop) are available from Scientific Botanicals. Both of these products are also available at the Tahoma Clinic dispensary (253)850-5661, <www.tahoma-clinic.com>, with which I am, of course, affiliated. Very recently, the Life Extension Foundation (800) 544-4440, www.lef.com, has made available Super K (10 milligrams per softgel).

Knowing what to take

Do we really need to take a vitamin K supplement? If there’s a family history of osteoporosis, definitely. There’s also enough preliminary evidence to say that if there’s a family history of arteriosclerosis (“hardening of the arteries”), you probably should. And of course, there are the other applications that we discussed.

How much supplemental vitamin K should you take? Fortunately, vitamins K1 and K2 are very safe; only K3 (as noted above) in enormous doses has caused problems. Except in special circumstances, 5 to 15 milligrams daily appears to be sufficient.

Caution: Vitamin K can “interfere” with the function of the drug Coumadin (an anticoagulant). (Actually, the drug Coumadin seriously interferes with the function of vitamin K, thus preventing normal blood clotting…and may cause any or all vitamin K deficiency problems, both short- and long-term…but that’s a topic for another time.) If you’re taking Coumadin, DON’T take vitamin K! It’s wiser to check with a physician skilled and knowledgeable in nutritional and natural medicine to discuss alternatives to Coumadin first.

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