

Vitamin K2: 9 Uses and Benefits

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Vitamin K2 is an essential vitamin that many people never hear of until they have their first child and the nurse administers a Vitamin K injection.

Sadly, this essential nutrient is often overlooked, and it is important at all life stages, not just for newborn babies or pregnant moms. Other vitamins and minerals like [Vitamin D](#), [Magnesium](#) and [Calcium](#) get the attention they deserve, but K2 is often ignored with dire consequences.

What is Vitamin K2?

Vitamin K is a fat soluble vitamin that is important for blood clotting and that contributes to a healthy heart, bones and immune system.

There are several different forms, mainly K1 and K2, though they act differently in the body:

- **Vitamin K1**– (or phyloquinone) is natural form found in greens and nettle that is used by the liver for proper blood clotting.
- **Vitamin K2**– (or menaquinone) is a more absorbable form of Vitamin K found in certain fermented foods and supplements is used by soft tissues and is helpful for bones, heart tissue and more
- **Vitamin K3**– (or menadione) is a synthetic form of Vitamin K. This is typically the one injected into infants at birth and some studies have shown potential toxicity from this form

Which Form Is Best?

Vitamin K1 is found in leafy greens, though only a small amount is actually absorbed and used by the body. In fact, experts suggest that only 10% of Vitamin K1 from greens is used by the body.

Vitamin K2 is found in fermented raw grass fed dairy and certain other fermented foods (like natto). This is because K2 is a product of the fermentation and is created by certain bacteria. In general, these foods contain a proportionately lower amount of K2 (compared to the K1 in greens), though much more is absorbed. (1)

Interestingly, studies have shown great health and cardiovascular benefits from K2, but hardly any effect from K1. K1 is necessary for proper blood clotting and is used by the liver, while K2 benefits the bones and controls proper utilization of calcium. In fact, it is helpful to think of them as two separate nutrients with different purposes.

There is also a misconception that the body can convert K1 to K2. The research actually showed that while some other animals can effectively convert K1-K2, humans need food or supplemental sources of K2 for good health. (2)

[Chris Kresser explains](#) why the K1->K2 conversion is not effective in humans:

It was once erroneously believed that intestinal bacteria are a major contributor to vitamin K status. However, the majority of evidence contradicts this view. Most of the vitamin K2 produced in the intestine are embedded within bacterial membranes and not available for absorption. Thus, intestinal production of K2 likely makes only a small contribution to vitamin K status. (Unden & Bongaerts, 1997, pp. 217-234)

Are we Deficient?

Estimates are that over half of the adult population is deficient in Vitamin K.

While the effects of Vitamin K deficiency can show up in more serious problems like cardiovascular disease, bone loss and tooth decay, it can also manifest in smaller symptoms like easy bruising, heavy periods, or nosebleeds.

Those with digestive problems or with a history of antibiotic use are the most at risk for these problems.

In general, it would be a good idea to get adequate K1 and K2 from diet and supplements, though K2 is the most studied and effective for the benefits listed below.

For the rest of this post, I'll be using the terms "Vitamin K" and "K2" to refer to the K2 form of Vitamin K.

So why is Vitamin K so important anyway?

1. For Healthy Bones

Research has shown that Vitamin K2 is one of the most important nutrients for long-term bone health and that [it is even more important than calcium](#).

K2 is needed to help calcium and other minerals bind into the bone matrix to strengthen bones (and not to stay in soft tissue where it can cause calcification in the wrong places).

In fact, studies have shown that Vitamin K is effective at not just stopping bone loss in people with osteoporosis but potentially reversing it as well.⁽³⁾ This same research found up to an 80% reduction in fractures in osteoporosis patients with K2 supplements.

2. For Heart Health

I wrote before about how calcification of the arteries can occur when a person consumes too much calcium without the needed cofactors in the right ratios: Magnesium, Vitamin K2 and Vitamin D3.

The book [Vitamin K and The Calcium Paradox](#) details how Vitamin K is needed to usher calcium into bones and other necessary places in the body and keep it out of soft tissue, arteries and the heart. [Magnesium is also important for this process](#) and without the needed K2, D3 and magnesium, calcification is more likely.

It is important to note that the research only shows a cardiovascular benefit from K2 and not K1. In fact, the Rotterdam study found that those with the highest dietary or supplemental intake of K2 had the lowest risk of calcification of the arteries, and the lowest risk of getting or dying from cardiovascular disease.

With the drastic rise of heart disease in recent decades, Vitamin K is becoming an ever-important topic.

3. For Oral Health

[Oral health is vital for overall health](#) and Vitamin K is important for oral health. In fact, [Vitamin K was one of the vitamins that Dr. Weston A. Price found was vital for tooth remineralization and prevention of cavities](#).

I used it as part of [my tooth remineralization process that helped me reverse several small cavities](#). (I recently confirmed that remineralization is possible in an interview with a dentist who specializes in this process- [listen here](#))

4. To Reduce Varicose Veins

This will be getting its own post soon, but the same action that makes Vitamin K beneficial for bone health may also

make it helpful for those with varicose veins. (4)

Human research is still in the early stages, but we know that Vitamin K is needed for the production of MGP (matrix GLA protein), which helps avoid calcification in the arteries. This same protein helps stop calcification in the veins as well since the calcium meant for the bones is ushered into the bones and does not accumulate in veins and arteries.

The preliminary study published in the Journal of Vascular Research found that Vitamin K2 was necessary in reversing the chemical change and avoiding or getting rid of varicose veins.

More research is needed, but since Vitamin K has so many other benefits, it might be worth trying for those who struggle with varicose veins.

5. To Reduce Cancer Risks

There are several well-documented studies that show a correlation between higher Vitamin K consumption and lower risk of certain cancers:

- A European cohort study showed that K2 may reduce the risk of prostate cancer by 35% (5)
- A follow up study showed a 63% reduced risk of prostate cancer in those with the highest Vitamin K intake vs. the lowest (6)
- A 2003 study showed a benefit of K2 in slowing the growth of lung cancer and leukemia cells.
- It is also shown to reduce the risk of and halt the growth of hepatocellular carcinoma, a dangerous type of liver cancer. (7)
- It impairs the ability of cancer cells to stimulate tumor growth (8)
- Stop the proliferation of cancer cells (9)

[Life Extension Magazine](#) reported that:

Lab studies demonstrate tremendous potential for vitamin K in many other cancer types as well. Vitamin K2 induces certain kinds of human leukemia cells to differentiate, or turn into normal white blood cells. In cells from certain brain tumors, in stomach cancer, and in colorectal cancer lines, vitamin K halts the reproductive cell cycle and induces apoptosis. Vitamin K also triggers a DNA-degrading protein that cancer cells normally suppress; thereby preventing tumor cells from repairing themselves effectively.

More research is definitely needed, but these initial studies show that Vitamin K may be an effective (and inexpensive) possibility for the future of cancer treatment.

6. For Brain Health

Some fascinating new research showed that the same process that makes Vitamin K helpful for preventing calcification of the arteries and muscle tissue might also make it beneficial for protecting the brain against Alzheimers and other diseases.

In short, the theory is that Vitamin K helps prevent excess calcium in the body (including the brain), and this excess disregulated calcium in the brain accounts for some of the damage from Alzheimers.

Another study looked at the dietary intake of Vitamin K in patients with early Alzheimers and found that those diagnosed with Alzheimers had considerably less Vitamin K than those in the control group. (10)

7. Longevity

We now know that Vitamin K affects 16 Gla-proteins in the body. This is one of the reasons that studies have consistently shown an inverse relationship between Vitamin K levels and mortality from all causes. (11) In other words, the better your Vitamin K levels, the less likely you are to die from all causes. (12)

In fact, the most recent study showed that those with the highest intake were 36% less likely to die from all causes than those with the lowest. (13, 14)

Of course, all of the above benefits show why it would logically have such an impact on mortality by reducing the risk of death from the main causes like atherosclerosis, osteoporosis, diabetes, and cancer, but it appears that there is a dose dependent correlation with Vitamin K intake:

Insufficient blood clotting was thought to be the main sign of vitamin K deficiency. However, scientists have since learned that you can have enough vitamin K to promote healthy blood clotting, yet still not have enough vitamin K for it to activate the Gla-proteins necessary to help prevent cardiovascular disease, osteoporosis, diabetes, and cancer, all conditions in which vitamin K-dependent proteins are known to be factors. Fortunately, studies show that vitamin K supplementation can significantly increase the amount of activated Gla-proteins in tissues—without over-activating the clotting proteins.
(15)

8. Synthesis of Other Nutrients

I already mentioned how Vitamin K is needed for proper calcium synthesis (along with magnesium) but it is also needed in balance with Vitamin D3.

K2 and D3 work synergistically for many aspects of health. In fact, Calcium, Magnesium, K2 and D3 all work in balance. Taking too much D3 can cause a Magnesium deficiency without supplemental magnesium. Taking too much calcium can cause a magnesium deficiency or lead to over-calcification.

Vitamin D helps you absorb calcium, but K2 helps it actually end up in your bones and Magnesium helps make sure it gets there efficiently.

9. Skin Health & Anti-Aging

K2 is also promising for skin health and anti-aging. Just as it prevents the calcification of arteries, veins and soft tissue, it helps stop excess calcium in the elastin in the skin.

For this reason, K2 may help keep skin elastic and prevent wrinkles.(16)

2011 research showed that women with extensive wrinkles were also more likely to have low bones mass. Other research has shown that Japanese women were less likely to have wrinkles than other cultures, and noted the natto (fermented soy high in K2) in the diet of Japanese women.

How to Test for Vitamin K2 Deficiency?

You can measure serum K1 and K2, just like you can measure D3, but unfortunately, this is not extremely accurate, since K1 is held in the liver and has a short half life (about 4 hours). Essentially, a serum K test would only reveal Vitamin K levels from food intake in the last day or so.

There is a more advanced test, called the enzyme-linked immunosorbent assays (ELISA) that tests the presence of

MGP. Initial reports on this test showed that almost 100% of people tested were deficient. The doctor who developed the test, Dr. Schurgers, suggests that almost everyone could benefit from increasing dietary and supplemental levels of K1 and K2.

What I do...

Since there are no known side effects from K2 consumption, even at high levels, I take 180 mcg ([two 90mcg capsules](#)) per day on most days (consuming a [small amount of Natto](#) would also work). I also consume [Fermented Cod Liver Oil Daily](#), which is a natural source of K2 (and other fat soluble vitamins), as well as [Emu Oil](#) (a natural source of K2). Raw butter from grass fed cows is also a good source of Vitamin K2 for those who tolerate dairy.

Some experts recommend as much as 500mcg per day, but I would only consume high levels like this under the guidance of a practitioner to make sure that cofactors (D3, calcium and magnesium) maintained proper levels as well.

For K1- I eat a lot of leafy greens and use [nettle leaf](#) (high in K1) in many of my homemade herbal teas.

Of course, since K2 is a fat soluble vitamin, it is important to check with a doctor before taking, especially at high doses of if pregnant or nursing. I also recommend [this book](#) for learning more about Vitamin K supplementation and safety.

Food Sources of Vitamin K

Food sources of K1:

- Kale
- Dried Basil
- Spring Onions/Scallions
- Broccoli
- Brussels Sprouts
- Asparagus
- Cabbage
- Cucumbers
- Prunes
- Most greens

Food sources of K2:

- Natto (best source)
- Grass fed butter (raw)
- Grass fed cheese (raw)
- Egg Yolks
- Chicken livers
- Grass fed Beef
- Chicken

Bottom Line

I believe that Vitamin K2 is an unspoken and vitally important nutrient and that widespread deficiency could be related to the rapid rise in health problems we see in modern society.

Those who have any of the health problems associated with K2 deficiency (listed above) might consider doing their own research on K2 and talking to a qualified doctor or practitioner to see if it would be beneficial for their specific cases.

Have you ever used Vitamin K2? Did you notice any benefit? Share below!