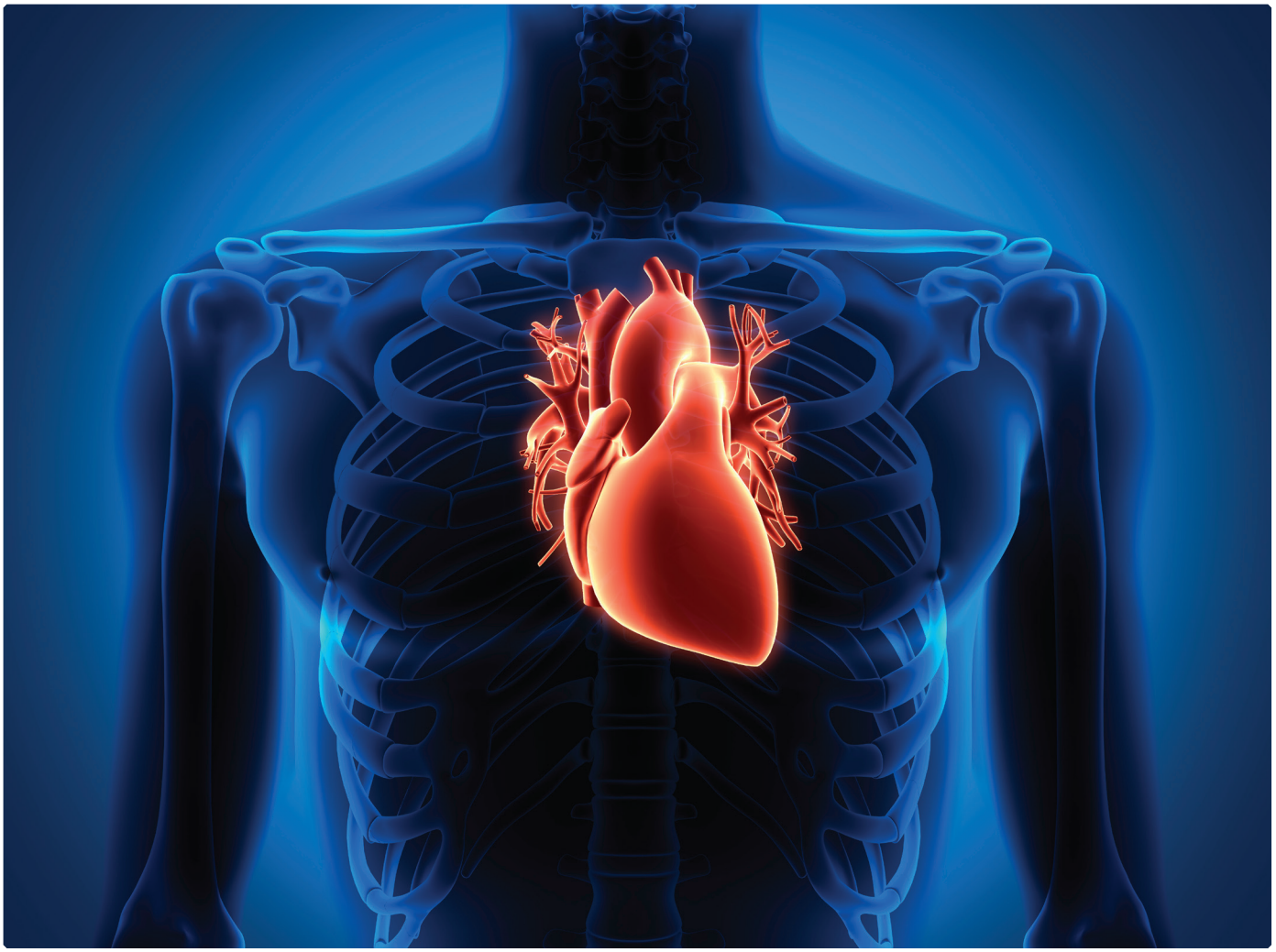


WHAT IF ONE ESSENTIAL VITAMIN COULD PREVENT YOU FROM BECOMING A STATISTIC?

When most people think about vitamin K, they think of blood clotting. This is not at all surprising given that the Nobel Prize was awarded for this discovery in 1929. However, recently research has shown us that vitamin K – specifically vitamin K2 – may be key to healthy bones and hearts.

by Kate Quackenbush

There are many conditions that we have historically associated only with getting older. However, we now know that these conditions not only affect people at earlier ages then we first thought; these diseases start silently long before we notice anything.

Osteoporosis is a classic example. According to Osteoporosis Australia, this disease affects approximately 1.2 million Australians, while another 6.3 million have low bone density. Most sufferers do not even realise they have low bone mass, let alone osteoporosis.

Perhaps most startling, the probability of developing a bone disease later in life is closely related to the amount of bone mass one accumulates before age 30. Up to 90 percent of peak bone mass is acquired by age 18 in girls and by age 20 in boys. Just a 10 percent increase in bone mass is estimated to reduce the risk of osteoporotic fracture in adult life by 50 percent.3

Meanwhile, cardiovascular disease (CVD) is a major cause of death in Australia – killing one Australian every 12 minutes and affecting one in six Australians (3.72 million). According to the Australian Heart Foundation, people as young as 15 can have risk factors for heart disease.

Vitamin K2 for both bone and heart?

The human skeleton is constantly being repaired. In fact, the tissues are essentially replaced completely every seven years. Bone is comprised of a hard outer shell and spongey inner tissue matrix, which, despite being solid, is still dynamic and changing. Bone maintenance is regulated by two types of cells: osteoblasts – cells that build up the skeleton – and osteoclasts – cells that break down the skeleton. As long as the bone-forming activity (absorption) is greater than the bone breakdown (resorption), the process of maintaining healthy bones will be kept under control.

The body needs a wide range of nutrients that work together in order to operate optimally. When it comes to bones, calcium is probably the best known nutrient for its role in bone strength and, for many years, people supplemented to ensure they had strong healthy bones. However, in recent years some studies have found links between calcium supplementation and increased risks of ischaemic heart disease and stroke. Once these studies made the headlines, people became concerned about the risk and gave up calcium supplementation. So what is the link?

Calcium can be deposited in bones and contributes to bone strength, but it can also be deposited in arteries where it makes them stiffer and less flexible. So clearly we need to help direct the calcium into the bone and away from the arteries, but how does the body regulate where the calcium goes and how can a vitamin help?

Vitamin K2 – directing calcium

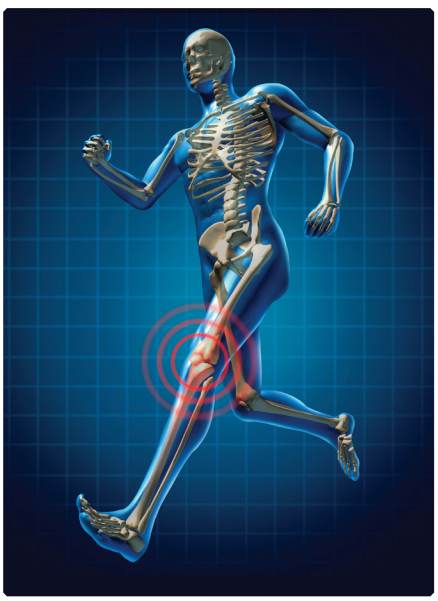
Vitamin K2, specifically vitamin K2 as menaquinone-7 (MK-7), has been shown to increase the activation of two important vitamin K-dependent proteins: osteocalcin and matrix GLA protein (MGP). Once activated, osteocalcin binds calcium to the bone matrix, while MGP inhibits calcium from depositing into arteries and blood vessels. In this way, vitamin K2 helps the body to simultaneously build strong, dense bones while protecting cardiovascular systems from dangerous calcium deposits.

Evidence for vitamin K2

In recent studies, MK-7 not only improved bone mineral density, bone mineral content, and bone strength1, but it also stopped age-related arterial stiffening and improved arterial flexibility.2

In the first study, the research team monitored 244 healthy postmenopausal women who were randomly selected to receive either 180 mcg of MK-7 daily or a placebo for three years.

The supplementation group significantly increased the circulating active osteocalcin (cOC), a well-established biomarker for bone and vitamin K status. After three years of supplementation, improvements in both bone mineral content and bone mineral density were statistically significant in the vitamin K group. Moreover, bone strength was statistically improved. Next, the same same group of 244 healthy postmenopausal women took recognised standard measurements for cardiovascular health (pulse wave velocity and ultrasound techniques). The results confirmed that carotid artery distensibility was significantly improved over a three-year period as compared with the placebo group. Also, pulse-wave velocity was significantly decreased in the K2 group, but not the placebo group, demonstrating an increase in arterial elasticity and reduction in age-related arterial stiffening. In other words, the arteries actually became more healthy and flexible.



The evidence also supports vitamin K2 earlier in life. A 2014 study published in Food & Function revealed that healthy children have the largest tissue-specific vitamin K deficiency – eight to ten times more inactive osteocalcin – followed by adults 40 years and older.4 Still more research has emphasised the importance of MK-7 supplementation: A 2009 published study indicated that improving vitamin K status in children over a two-year period resulted in stronger, denser bones. A year later the same group demonstrated that, in healthy pre-puberty children, modest supplementation with vitamin K2 as MK-7 increased osteocalcin activation.5

In this eight-week, double-blind, randomised, placebo-controlled trial, 45 micrograms of vitamin K2 as MK-7 was given to healthy pre-puberty children. The placebo group displayed no significant changes in ucOC, cOC, the ratio of ucOC to cOC, and MK-7, while those who took the vitamin K2 supplement saw increased osteocalcin carboxylation, the 2009 British Journal of Nutrition study concluded.

References for this article are provided on the online version of this article. Please go to www.livingnow.com.au and search on the author name or any key words. ■

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