

Vitamin K2 and Cardiovascular Health

Vitamin K2 could help prevent and treat attack, stroke and more



Cardiovascular disease (CVD) is the leading cause of death and illness globally, causing over 17 million deaths each year. According to the World Health Organization (WHO), the number of CVD deaths are predicted to rise to 23.3 million by 2030. One reason CVD results in high levels of mortality is that the early stages of the disease progress largely asymptotically. By the time the condition is diagnosed it's often already severe and can be difficult to treat. A wide range of factors can lead to CVD. We are all aware of how important diet and lifestyle are in keeping our bodies healthy and lowering our chances of any serious illness. New ways to improve cardiovascular health are emerging. One of the most exciting topics to receive attention is the role of vitamin K2 in vascular health, and its involvement in regulating calcium levels in our bodies.

To understand how important calcium is to cardiovascular health, we must examine more closely what happens when CVD is developing. The first stage of CVD is usually characterized by atherosclerosis. This takes many years to develop, and is one of the early symptoms of CVD that goes unnoticed by the sufferer. Atherosclerosis occurs as a result of invasion and accumulation of white blood cells, fats and various mineral crystals in the artery walls, eventually forming a hard plaque. The main component of this plaque is calcium. The build-up of plaque in the vasculature increases blood pressure and leaves arteries hard and unyielding. Blood flow can become partially or totally obstructed where clumps of plaque form. Vessels afflicted by plaque build-up also have uneven internal surfaces and are therefore fragile and prone to tearing. The changes in the vasculature force the heart to work harder and harder as plaque levels increase, causing cardiac and whole body stress.¹

It follows then that the levels of calcium stored in one's arteries are an indicator of cardiovascular health, and also the chances of survival after suffering a cardiac event.² High levels of calcification give an artificially high 'age' and low levels give a correspondingly low 'age' - the levels of calcium in your vasculature can effectively alter your biological age, potentially reducing it by up to 10 years.³

So, it is clear that controlling the levels of calcium deposition in our bodies is extremely important for CVD prevention and treatment. Many factors regulate this process. The most important factor that inhibits calcification in the vasculature is called Matrix Gla Protein (MGP).^{4,5} MGP binds to the calcium floating around our system, preventing it from forming plaques.⁶ To perform this vital function MGP must be activated, or 'switched on.' This is done by an enzyme called gamma-glutamyl carboxylase, and this enzyme is dependent on vitamin K to do its work. So, MGP activation requires vitamin K. Therefore, inhibition of calcification requires vitamin K. A lack of vitamin K means normal MGP activation cannot occur. In this situation, largely inactive MGP is formed. This inactive MGP cannot prevent calcification in the vasculature. Schleiper et al. showed that high levels of this form of MGP in the blood predict a higher risk of cardiovascular disease and mortality.⁷

These studies highlight the need for good levels of vitamin K in preventing and treating the development of CVD.⁸ Westenfeld *et al* showed in 2012 that the levels of inactive MGP are



decreased markedly by daily vitamin K2 supplementation.⁹ Lou *et al* (1997) showed that MGP knockout mice died after only six to eight weeks due to massive calcification of their arteries. This highlights the vital importance of fully activated MGP in proper cardiovascular functioning.

A recent three year study conducted by Braam *et al* (2014 - under publication) showed significant benefits to subjects taking a daily vitamin K2 supplement called MenaQ7 (180µg/day). They experienced improved blood flow compared to the placebo group, which suffered age-related arterial stiffening. The test group also enjoyed unprecedented, statistically significant improvements in vascular elasticity. So vitamin K2 supplements may help keep your cardiovascular system young and supple.

It has been found that a significant intake of vitamin K2 (not vitamin K1) has a strong protective effect on heart health.¹⁰ Gelejinse *et al* (2004) showed that daily consumption of more than 32µg of dietary vitamin K2 reduces the risk of arterial calcification and death from CVD by as much as 50%.¹¹ Gast *et al* (2009) demonstrated that for every 10µg of vitamin K2 ingested there is a reduction in risk of coronary heart disease by 9%.¹²

A large section of the population has sub-clinically low levels of vitamin K in their diet. Vitamin K2 supplements may prove to be a fantastic tool in preventing and treating CVD. However, it must be stressed that, although there are many encouraging results from these studies, it is absolutely vital that patients receiving any treatments for CVD, particularly oral anticoagulants, talk to their physician *before* taking any vitamin supplements.

References:

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