



Vitamin K2 and Menopause

Worldwide, osteoporosis causes more than 8.9 million fractures annually¹ and one in three women over the age of 50 will experience a fracture.² Osteoporotic fractures lead to significant morbidity and reduced quality of life. Because osteoporosis itself is asymptomatic, it is often only diagnosed at the time of a fracture.

Oestrogen plays an important role in maintaining bone strength. After menopause, oestrogen levels drop and this results in accelerated bone loss. The average woman loses up to 10% of her bone mass in the first five years after menopause.³ Data from Healthy Bones Australia suggest that 27% of women age ≥ 60 are osteoporotic and 51% of women ≥ 60 are osteopaenic.⁴

To reduce the risk of developing osteoporosis, a number of dietary and lifestyle factors should be addressed including increasing calcium⁵ and vitamin D.⁴ Weight-bearing exercise, ceasing smoking and reducing alcohol can also help support bone health.⁶⁻⁹ However, there is less general knowledge about the merits of vitamin K2 post-menopause and its effect on health.

Vitamin K2 is a fat-soluble vitamin that plays an important role in bone metabolism and bone turnover and supports cardiovascular health by reducing calcification of blood vessels.¹⁰⁻¹⁵

In a 3-year randomised controlled trial (RCT), vitamin K2 (as menaquinone-7) at a daily dose of 180 mcg has been shown to support bone health in postmenopausal women. The results showed significant reductions in aged-related loss of bone mass and bone mineral density (BMD) at the lumbar spine and femoral neck. There was also improved bone strength and bone health and reduced loss of vertebral height. Other results included increased levels of carboxylated osteocalcin and less un-carboxylated osteocalcin. These benefits were sustained over the 3 years of the study.¹⁶

A meta-analysis of 19 RCTs, involving 6759 participants, found that vitamin K2 improved activation of osteocalcin, which facilitates calcium being moved into bone. It also was shown to improve vertebral bone mineral density (BMD) as well as the incidence of fractures in post-menopausal women.¹⁷

Another concern for post-menopausal women may be cardiovascular health. This is because oestrogen has been shown to be a hormone that plays an important role in women's cardiovascular health. It appears to be protective in women prior to menopause and may explain the later onset of cardiovascular disease (CVD) in women compared with men.¹⁸⁻²⁰

Vitamin K2 is also important for cardiovascular health. In fact, it has been shown that vitamin K2 inhibits abnormal soft tissue and blood vessel calcification, arterial stiffening and has a cardioprotective role against heart disease.^{12,13,21,22}

Vitamin K2 is also essential for the activation or carboxylation of matrix GLA-protein (MGP) to cMGP, which inhibits calcium being deposited in blood vessels, so it protects against vascular calcification.^{12,21} In addition, Vitamin K2 supports cardiovascular health through activation of osteocalcin, as well as another vitamin K-dependent protein Gas6, both of which play a secondary role in modulating the vascular calcification process via actions on vascular smooth muscle cells.¹²

The importance of vitamin K2 in both bone and cardiovascular health is in synergy with vitamin D. There have been several studies showing that these two vitamins work together to optimise bone mineral density in post-menopausal women.^{13,23-25}

The cardiovascular aspect is demonstrated in studies where it is concluded that their combination may reduce the risk of vascular calcification and atherosclerosis progression.^{13,26-28}

There is no doubt that vitamin K2 is an important vitamin in the body. Specifically, its role in bone and cardiovascular health, and when in combination with vitamin D, cannot be underestimated.

**References available on request.*