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Vitamin K2 shows 'extremely important improvements in clinical outcomes' for bone health



By Stephen Daniells+
27-Mar-2013

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Supplements containing vitamin K2 may reduce bone loss and improve bone impact strength in postmenopausal women, according to a new 'ground-breaking' study sponsored by NattoPharma.

A daily dose of 180 micrograms of the company's MenaQ7-branded vitamin K2 for three years produced significant improvements in bone mineral content and bone mineral density in post-menopausal women, according to findings published in *Osteoporosis International*.

In addition, vitamin K2 was associated with favorable changes to bone strength, report researchers from VitaK at Maastricht University in The Netherlands.

"These demonstrated improvements in clinical outcomes are extremely important," said Dr Cees Vermeer, lead investigator for the study.

"Despite reports on small or insignificant effects on bone health after clinical interventional studies on vitamin K2 – lasting up to one year - we have documented that MenaQ7 supplementation over three years prevents bone loss in postmenopausal women, confirming that bone health benefits of vitamin K2 is best demonstrated over longer periods than previously thought.

"The dose of 180 mcg of MenaQ7 per day significantly decreases age-related loss in bone mass and thereby exerts improvements in bone strength."

K forms

There are two main forms of vitamin K: phylloquinone, also known as phytonadione, (vitamin K1) which is found in green leafy vegetables such as lettuce, broccoli and spinach, and makes up about 90% of the vitamin K in a typical Western diet; and menaquinones (vitamins K2), which make



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up about 10% of Western vitamin K consumption and can be synthesized in the gut by microflora.

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Menaquinones (MK-n: with the n determined by the number of prenyl side chains) can also be found in the diet; MK-4 can be found in animal meat, MK-7, MK-8, and MK-9 are found in fermented food products like cheese, and natto is a rich source of MK-7.

The study's findings were welcomed by Hogne Vik, CEO of NattoPharma. *"The results from the three-year human study on MenaQ7 show for the first time in history that daily intake of 180 micrograms MenaQ7 may help postmenopausal women to prevent bone loss, and therefore may drastically delay development of osteoporosis,"* he said.

Osteoporosis is characterized by low bone mass, which leads to an increase risk of fractures, especially the hips, spine and wrists. An estimated 75 million people suffer from osteoporosis in Europe, the USA and Japan.

Women are four times more likely to develop osteoporosis than men.

Study details

Dr Vermeer and his co-workers recruited 244 postmenopausal women aged between 55 and 65 to participate in their randomized, placebo-controlled trial. The women were randomly assigned to receive either placebo or a low dose vitamin K2 supplement (180 micrograms per day) for three years. The supplements were prepared by EuroPharma Alliance (Poland) for NattoPharma (Norway).

At the end of the study – which boasted exception compliance of 91.4% - women in the placebo group experienced a decline in BMD in the lumbar spine of about 1.5%, whereas the loss in vitamin K2 group was less than 0.5%.

The vitamin K2 supplements were also associated with a significant lowering of levels of circulating inactive osteocalcin (ucOC) by about 50 %, compared with an increase of about 4% in the placebo group.

Osteocalcin (cOC) is a vitamin K-dependent protein and is essential for the body to utilize calcium in bone tissue. Without adequate vitamin K, the osteocalcin remains inactive, and thus not effective.



"These results confirm the hypothesis that long-term supplementation with MK-7 beneficially affects bone health," wrote the researchers.

"Our findings support EFSA's acceptance of the health claim that 'a cause and effect relationship has been established between vitamin K and maintenance of normal bone'."

Frode Bohan, Chairman of the NattoPharma Board, said the company will actively use the findings together with its customers and partners *"to improve our commercial platform, commercializing MenaQ7 in the supplement and functional food markets throughout the world"*.

Breakthrough results, breakthrough products

Vladimir Badmaev, MD, PhD, Head of R&D for NattoPharma ASA told us: *"The three-year study of MenaQ7 is a 'breakthrough' study because it shows for the first time clinically statistically significant protection of the vertebrae and the hip (femoral neck) against osteoporosis, cardiovascular*

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deterioration and metabolic deterioration. One of the most important findings from the study was that clinically relevant improvement became evident no sooner than after two and three years of MenaQ7 supplementation.

"This finding explains for the first time why shorter studies (12 month as cited above) typically failed to show benefits of vitamin K on bone health and cardiovascular health. Establishing a correlation between length of administration and efficacy of menaquinone-7 intake is a clinically significant 'breakthrough' established in this three-year study of MenaQ7."

Dr Badmaev added: "While the 'breakthrough' studies may bring more awareness for vitamin K supplementation, even less awareness exists among manufacturers and end customers on the proper form and quality of vitamin K needed in supplements.

"NattoPharma has undertaken another 'breakthrough' project in the field of manufacture and technology of natural vitamin K. This led to the development of The MenaQ7 Crystals brand. What is probably the most significant technological breakthrough in the MenaQ7 Crystals manufacture is a proprietary multi-step process of purification, condensation and crystallization of fermentation-derived K2. MenaQ7Crystals fermentation-process starting materials and excipients are soy free and hypoallergenic."

Source: [Osteoporosis International](#)

March 2013, doi: 10.1007/s00198-013-2325-6

"Three-year low-dose menaquinone-7 supplementation helps decrease bone loss in healthy postmenopausal women"

Authors: M.H.J. Knapen, N.E. Drummen, E. Smit, C. Vermeer, E. Theuwissen

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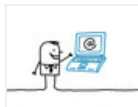
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