

The Benefits of Chickpea-Derived Vitamin K2 as MK-7

By Gene Bruno, MS, MHS, RH(AHG)
Chief Scientific Officer, Nutraland USA, Inc.

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There is a significant body of research on the health benefits of vitamin K2 as menaquinone-7 (MK-7). Commercially, MK-7 is available in a synthetic form, and in a natural form from natto, a traditional fermented Japanese food made from whole soybeans. In addition to these two forms, Nutraland USA also offers a chickpea-derived MK-7 for those who prefer a natural and soy-free option. These are part of our complete vitamin K solution offerings known as K2Go®.

Chickpea derived MK-7

A probiotic strain was isolated from the roots of chickpeas (*Cicer arietinum*, aka, garbanzo beans). A significant amount of vitamin K2 as menaquinone-7 (MK-7) was detected in the strain, along with a small amount of MK-9.¹ Likewise, in a process was elucidated for manufacturing MK-7 from chickpeas via fermentation with the probiotic *Bacillus licheniformis*².

Chickpea health benefits

As a good source of fiber and protein, chickpeas have been in our food supply for a long time, appearing in early recordings in Turkey about 3500 BCE and in France 6790 BCE.³ Besides functioning as a source of nutrition, chickpeas also offer distinct health benefits.

A double-blind randomized crossover study⁴ aimed to determine the effects of replacing wheat flour with chickpea flour (composed of intact chickpea cells) on postprandial gut hormones, glucose, insulin, and satiety responses to white bread. Results were that the chickpea flour bread stimulated an anorexigenic (i.e., appetite-reducing) gut hormone response and positively influenced glucose, insulin, and C-peptide (a measure of insulin production). Similar results were seen in prior research⁵ in which chickpea consumption elicited low postprandial glycemic (post-meal glucose) and enhanced subjective satiety responses.

Other randomized, controlled research⁶ has shown that sprouted chickpea flour in pasta not only had greater antioxidant activity than standard wheat flour, but also helped promote post-digestion flow-mediated dilation (i.e., a widening of an artery associated with greater blood flow), which may be beneficial for cardiovascular health.

Another interesting benefit to chickpea consumption has to do with the health of our microbiome. In a study⁷ on healthy adults, daily consumption of chickpeas was shown to increase the production of butyrate, a short-chain fatty acid produced by friendly intestinal bacteria that is associated with many of the benefits of probiotics. The authors of this study concluded that chickpea has the potential “to modulate the intestinal microbial composition to promote intestinal health in humans”.

While these health benefits are unlikely to be directly associated with the consumption of chickpea derived MK-7, as previously noted there are certainly well-established benefits associated with the consumption of vitamin K2 as MK-7.

MK-7 and cardiovascular health

In the July/August 2015 issue of the journal *Agro Food Industry Hi Tech*⁸, my coauthor and I discussed research showing that vitamin K acts to promote cardiovascular health by inhibiting calcification in the arteries—which would otherwise lead to atherosclerosis. The vitamin K-dependent proteins Gla protein (synthesized by osteoblasts) and matrix Gla protein (MGP, found in cartilage, bone, and soft tissue, including blood vessel walls) are local inhibitors of calcification in the tissues in which they exert their function. In that same article, we also discussed the results of a three-year, double-blind, placebo-controlled trial in which 248 postmenopausal women received 180 mcg/day of MK-7 or a placebo to examine the effect on arterial stiffness (i.e. caused by calcification). The results were that supplementation with MK-7 significantly decreased measures of aortic stiffness.

MK-7 and bone health

This same dose of MK-7 was shown to have benefits in a placebo-controlled study by Knapen *et al.*⁹ For three years, healthy postmenopausal women (n = 244) received 180 mcg MK-7/day or placebo. DXA was used to assess various measures of bone density measurements, bone strength indices of the femoral neck were calculated, and uOC was measured. The results were that MK-7 significantly improved vitamin K status, decreased the age-related decline in bone mineral content and bone mineral density at the lumbar spine and femoral neck, improved bone strength and significantly decreased the loss in vertebral height of the lower thoracic region at the mid-site of the vertebrae.

Conclusion

Vitamin K2 as MK-7 has important benefits for cardiovascular and bone health. As part of Nutraland USA's complete vitamin K solution offerings known as K2Go®, we offer both Natto-derived MK-7 as well as Chickpea-derived MK-7 for those who prefer a soy-free option.

Nutraland USA offers clean, plant-based and sustainable branded ingredients supported by science. Our nutraceuticals are good for you, and good for the planet. For more information about how you can use K2Go® chickpea derived vitamin K2 as MK-7 in your dietary supplements, contact gene.bruno@nutrallandusa.com; 949-988-7615.

References

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- ⁶ Bruno JA, Feldman CH, Konas DW, Kerrihard AL, Matthews EL. Incorporating sprouted chickpea flour in pasta increases brachial artery flow-mediated dilation. *Physiol Int*. 2019 Sep 1;106(3):207-212.

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