



Vitamin K2

Mk-4 vs Mk-7 Vitamin K supplementation

Vitamin K is an essential nutrient that is available in 3 forms as a dietary supplement:

Vitamin K1 is from plants and tends to be poorly bioavailable

Vitamin K2 is available in 2 main forms: Menatetrenone (Mk-4) and Menaquinone (Mk-7)

The difference between Mk-4 and Mk-7 is the structure of the molecule, Mk-7 having a longer side chain

Natural Vs Synthetic

Claim: Mk-7 is natural and Mk-4 is synthetic

Facts:

Mk-7 is made through the bacterial fermentation of soya beans

Mk-4 is synthetic

However:

- Mk-4 is naturally produced in the body
- Mk-7 is not naturally produced in our body
- Mk-4 produced synthetically is identical to the Mk-4 naturally produced in the body
- Vitamin K1 and Mk-7 are converted into Mk-4 in the body
- The claim that Mk-7 is more natural is therefore fairly unsubstantial
- Also, Mk-7 comes from soy, a common allergen

Better Bioavailability

Claim: Mk-7 is more bioavailable than Mk-4

Facts:

Mk-7 stays in the blood longer

Mk-7 levels are higher than Mk-4 levels after supplementation

However:

- If Mk-7 is metabolized to Mk-4 in the body, it is possible that this conversion takes a while, explaining why Mk-7 stays in the blood longer.



- Mk-4 is selectively enhanced in breast milk and breast milk levels rise in response to supplementation. This is not the case for Mk-7. This suggests a greater biological importance for Mk-4
- Published clinical studies showing that Mk-7 stays in the blood longer have actually used Natto
- Since it is the bacteria in natto that produces the Mk-7, it is likely that the bacteria in the natto implants itself in the gastrointestinal tract and keeps producing Mk-7 giving the impression that Mk-7 has a longer half life
- Mk-7 when sold as a supplement does not contain the bacteria that produced Mk-7 in Natto
- This also explains why animal studies show that Mk-4 and Mk-7 have the same half life
- Anyhow, a longer plasma half life is not evidence of superiority or better bioavailability



General health

Claim: Mk-7 is more effective than Mk-4

Facts:

Mk-4 is capable of performing all the functions of vitamin K

Mk-4 activates blood clotting factors, is an antioxidant, a cofactor for the production of lipids in the brain, keeps arteries clear, and activates a number of genes

Many of these functions have not been studied in the context of Mk-7

Bone health

Claim: Mk-7 possesses superior bone benefits.

Facts:

One study indicates that Mk-7 has a greater ability to carboxylate osteocalcin, a protein important for bone health.

However:

- Mk-4 activates two transcription genes in osteoblasts, increasing the production of bone forming cells
- Mk-4 is the only form of vitamin K2 shown to reduce fractures

Dosage

Claim: Mk-7 is more effective in lower dosages

Facts:

In low dosages, Mk-7 has been shown to accumulate in bones as Mk-4.

However:

- Mk-4 has been researched in dosages ranging from 45-60 mg for bone health, including bone density and fracture prevention.
- At this time, Mk-7 supplementation has not been shown to prevent fractures or to increase bone density

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