

The Science of K2 Stability

K2VITAL®

K2VITAL® for Bones

K2 activates the osteocalcin enzymes that integrate calcium into bone. Calcium needs both vitamins K2 and D3 to function optimally in the body.

K2VITAL® for Heart

K2 also activates matrix Gla proteins (MGP) which bind excess calcium in blood. This prevents calcium from building up in the circulatory system, reducing the risk of cardiovascular disease. K2 has even been shown to reduce existing calcification and restore arterial flexibility.

The vitamin K2 MK-7 market is on track to double again in 2018, propelled by bone and heart health benefits important to virtually every age group and consumer type. K2 activates the osteocalcin enzymes that integrate calcium into bone. Calcium needs both vitamins K2 and D3 to function optimally in the body. K2 also activates matrix Gla proteins (MGP) which bind excess calcium in blood. This prevents calcium from building up in the circulatory system, reducing the risk of cardiovascular disease. K2 has even been shown to reduce existing calcification and restore arterial flexibility.

These significant health benefits create product extension opportunities in several top-selling product categories. Consumer awareness and adoption continue to build, and K2 is beginning to appear in mass-market retail channels. Though with such broad commercial applicability, K2 is increasingly exposed to a wide range of co-ingredients. Vitamin D3, Omega-3, calcium and magnesium are frequently paired with K2 because of synergistic bone and cardiovascular health benefits.

K2VITAL® currently comprises about 30% of the global K2 market. K2VITAL® is 99.7% pure crystalline all-*trans* MK-7. While this degree of purity is noteworthy, it's not the only driver of this brand's large market share - at least not directly. The K2 market enjoys healthy competition among several manufacturers of high-purity MK-7. Pure, high-trans ingredients should all perform well in mono-K2 products and non-mineral formulations, and in turn contribute to the healthy growth of the K2 market.

K2 however, is a member of the fat-soluble vitamins group. In 1948 the US Federal Security Agency found that when fat-soluble vitamin D is combined with calcium, it can degrade 'within a month or two.' Sixty years later, following the market launches of the first K2-plus-calcium products, a new challenge was discovered. Label claim testing of these first K2-plus-minerals formulations demonstrated that they were not shelf-stable and that the K2 MK-7 degraded quite rapidly. Even the purest, highest-quality K2 MK-7 proved unstable when combined with minerals like calcium or magnesium.

This posed a challenge for K2 because it severely limited the potential size of the market. The bone and heart benefits of K2 were effectively closed to bone and heart health formulations that also used calcium, magnesium or other minerals. Categories that also target bone and heart health, such as multivitamins, women's health and healthy-ageing, were also closed to K2.

The solution was microencapsulation. Protection of the K2 MK-7 molecule prevents degradation or oxidation when K2 is formulated with incompatible co-ingredients. The effectiveness of microencapsulation isn't too surprising as this is the same solution used for other fat-soluble vitamins. And while purity itself is not a factor in the K2-plus-minerals stability equation, the microencapsulation production process requires near 100% purity. Encapsulated K2VITAL® DELTA can tolerate calcium and magnesium and as such can be included in a wider range of formulations targeting more consumer categories. Stability in mineral formulations is the primary reason for K2VITAL's disproportionate share of the global K2 market.

K2 stability was a hot topic of industry discussion in 2017, in part because of a K2 market study released early in the year. The study showed that over half of K2-plus-calcium or magnesium products sampled in 2016 missed label claim by 50% or more.

While less than ideal, these findings provide a 'silver lining' for 2018. Brands are increasingly factoring for K2 stability in product formulation, and contract manufacturers are proactively making recommendations when needed. These developments help protect consumers. Debate also fuels investment in science and R&D, driving future innovation. Finally, at least two K2 ingredient manufacturers announced free quality testing for K2 products. The Kappa Bioscience program, for example, will confidentially and at no charge test products for K2 label claim. This program is open to products from any source and includes independent third-party lab verification to ensure the integrity of results.

The past year introduced several innovations for vitamin K2 MK-7, and the future looks bright in 2018.



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