

**PURE, STABLE AND BIOAVAILABLE: WHY K2VITAL™ IS THE POWERHOUSE FOR VITAMIN K2 BY LINDSAY COLE, SALES & BUSINESS DEVELOPMENT MANAGER, NORTH AMERICA, KAPPA BIOSCIENCE AS, NOW A BALCHEM COMPANY**



Vitamin K2 plays a critical role in supporting bone, heart, and overall calcium metabolism—but remains under-consumed due to its limited presence in Western diets. Its most bioactive form, menaquinone-7 (MK-7), is found primarily in fermented foods, which are not commonly part of everyday nutrition. As a result, supplementation has become increasingly important.

However, supplementing with vitamin K2 is not as simple as it may seem. The MK-7 molecule is complex and difficult to manufacture with both purity and stability. To meet market expectations and health needs, brands must rely on ingredients that offer consistency, bioavailability, and regulatory assurance.

That's where K2VITAL™ from Balchem comes in. Patented, bioactive and exceptionally pure, it sets the standard for supplement effectiveness and safety, supporting essential calcium metabolism for health benefits at every life stage.

### The Science of Purity

Vitamin K2-MK7 is most effective in its all-trans configuration, a linear structure made up of seven double bonds. This configuration allows the molecule to interact with K2-dependent enzymes and proteins.

However, during manufacturing, some of these bonds may shift into a cis configuration, which is non-linear and significantly less bioactive.

To ensure supplement effectiveness, it is essential that MK-7 remains in its all-trans form. K2VITAL™ is produced with rigorous quality control measures and third-party verification to maintain high purity. By participating in programs like Alkemist Assured™, Balchem provides transparency and third-party validation to confirm the identity and strength of every batch.

This attention to purity not only supports health outcomes but also builds trust among manufacturers and consumers alike.

## Tackling Stability Challenges

Vitamin K2's instability is a well-documented obstacle in formulation. It is highly sensitive to light, oxygen, and alkaline environments—particularly when combined with minerals such as calcium or magnesium. Without protection, the molecule can degrade, leading to reduced shelf life and diminished efficacy.



To solve this problem, Balchem developed K2VITAL™ DELTA, a microencapsulated vitamin K2 MK-7.

In a market comparison, 100% of K2VITAL™ DELTA products retained or closely matched their labeled potency after three months, while only 8% of unprotected K2-plus-mineral combinations met that same benchmark. This breakthrough allows K2 to be formulated with other essential nutrients without compromising its integrity.

## K2 and D3: A Synergistic Combination

Vitamin K2 delivers even greater benefits when paired with vitamin D3. Together, they regulate calcium metabolism in the body by influencing proteins such as osteocalcin and matrix Gla-protein (MGP).

Vitamin D3 promotes the expression of these proteins, while K2 activates them—transforming them into their functional, carboxylated forms.

This synergy helps direct calcium into bones, where it supports bone mineral density, and away from arteries, where it could otherwise contribute to calcification.

Clinical research supports this combination for both skeletal and cardiovascular health, making it a staple in comprehensive supplement formulations.

## Expanding the Benefits: The Vital Trio

The addition of magnesium—one of the fastest-growing minerals in supplement retail—further enhances the potential of K2 and D3. Together, this trio supports not only bone and heart health, but also mood, relaxation, and immune function.

Historically, combining these three ingredients was difficult due to K2's sensitivity to mineral interactions. However, the protective barrier provided by K2VITAL™ DELTA removes this limitation. It enables formulators to confidently create advanced multi-functional products without risking degradation or label discrepancies.



This innovation has opened the door to a new class of formulas that align with today's consumer priorities—efficacy, convenience, and clean-label transparency.

### What Consumers Think

To validate its impact, Balchem conducted surveys across North America and three major European markets—Germany, Italy, and the UK. The study included 841 health-conscious participants who had purchased vitamins or supplements within the prior six months.

The results demonstrated strong market potential:

- 78% expressed purchase interest
- 72% perceived greater health benefits compared to control concepts
- 74% said the product addressed unmet needs
- 85% valued its benefits for bone, heart, and immune health
- More than half were willing to pay a premium for formulas containing the Vital Trio

These findings highlight the growing demand for comprehensive, science-backed solutions that simplify supplementation while maximizing impact.

### A Name that Delivers

K2VITAL™, K2VITAL™ DELTA, and the Vital Trio represent more than just ingredients—they embody a commitment to purity, innovation, and consumer well-being. With microencapsulation and quality assurance at the core, these solutions provide formulators and consumers with confidence in both performance and safety.



Whether used on its own or as part of a synergistic formulation, K2VITAL™ remains the go-to source for stable, bioavailable vitamin K2-MK7. Its reputation is backed by science, validated by market insights, and trusted by leading supplement brands around the world.



### FOR BRANDS READY TO TAKE ACTION

Reach out to  
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Special thanks to Lindsay Cole  
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