

Smartek: A Technological Leap in Stabilising and Enhancing Botanical Extracts

12 December 2025 | News

Dr Laura LÃ³pez-RÃ³os, Product Development Director, Research, Development & Innovation at Nektium



Dr Laura LÃ³pez-RÃ³os, Product Development Director, Research, Development & Innovation at Nektium

As consumer demand for clean-label, high-performance functional ingredients accelerates, botanical extracts are under pressure to deliver greater stability, improved solubility, better sensory profiles, and clinically validated efficacy. Nektium, a science-driven leader in natural botanical solutions, has responded to these evolving industry needs with Smartek by Nektium, an advanced technology platform designed to enhance the performance of botanicals in modern formulations.

In this exclusive NUFFOODS Spectrum interview, Dr Laura LÃ³pez-RÃ³os, Product Development Director, Research, Development & Innovation at Nektium, offers an in-depth look at the innovation behind Smartek, the formulation challenges it solves, and the next-generation opportunities it unlocks for categories such as beverages, gummies, sachets, and nootropic solutions. From stabilising sensitive bioactives to achieving full water solubility and sensory neutrality, Dr LÃ³pez-RÃ³os explains how Smartek is reshaping the future of botanical ingredients and powering the company's latest breakthroughs,

including Vanizem and Zynamite S.

What follows is a conversation that reveals not only the science and strategy behind Smartek but also Nektium's vision for the next wave of botanicals engineered for superior performance and consumer experience.

What industry gaps or formulation challenges inspired Nektium to develop the Smartek technology platform, and how does it differentiate your botanical extracts from conventional solutions in the market?

Many botanical bioactives are inherently unstable and can also have poor solubility as well as off-tastes and odours. These issues can limit the possibilities for their use across a range of product formats. Smartek by Nektium is an innovative suite of delivery technologies that we're using to deliver targeted enhancements to various botanicals. It allows us to take our botanical solutions to the next level in areas including stability, formulation versatility, and efficacy and bioavailability.

It's also important to highlight that all of our core technologies are food-grade and have been designed and rigorously tested for the safety and quality standards demanded by the food and beverage industry.

Smartek combines multiple proprietary technologies, including multi-stage microencapsulation and matrix inclusion systems. Could you explain how these systems work together to protect bioactives and improve efficacy at low doses?

Smartek uses proprietary combinations of the advanced techniques you mention and many others. They work together in different ways to deliver specific benefits, such as shielding and stabilising key bioactive compounds from external influences like oxygen, heat and moisture encountered during manufacturing and storage.

Multi-stage microencapsulation, for example, involves creating multiple layers around the bioactive core. This offers superior protection against degradation compared to single-layer encapsulation. It also helps to convert liquid extracts into stable powdered products. Matrix inclusion systems involve integrating the bioactive into a protective matrix that physically stabilises the compound and can influence its release profile.

We optimise the efficacy of the key bioactives through controlled release and in some cases improved bioavailability, which allows for lower effective doses.

Versatility in formulation, especially for beverages and gummies, is becoming increasingly important. How does Smartek specifically enable innovation in these fast-growing delivery formats?

We use Smartek by Nektium to target specific issues with botanicals that make them challenging to use in these applications.

For example, the technologies can be used to create a more neutral taste and odour profile without affecting the phytochemical composition or the structural properties of the molecule. Minimising the impact of the botanical's sensory profile is often vital if you want to use functional botanicals in formats like for gummies and beverages.

Some botanical bioactives are poorly soluble, too, so this needs to be addressed to support use in formats like RTDs and shots, where clarity, stability in liquid, and homogeneous dissolution are key quality requirements. For powder formats, including sachets and shakes, we've been able to use the technologies to provide better dispersibility and easier handling.

Two of your products, Vanizem and Zynamite S, already use Smartek. What benefits have formulators and brand partners reported so far, and how have these technologies improved product performance or consumer experience?

Vanizem® is our fast-acting mood- and sleep-enhancing extract of *Aframomum melegueta*. It works by inhibiting fatty acid amide hydrolase (FAAH), helping to maintain levels of anandamide, which is known as the "bliss molecule". This mechanism of action provides fast relief, with clinical research demonstrating that users experience improvements in mood, stress and sleep quality within just three days.

Vanizem® is extracted and processed using a patent-pending Smartek complex coacervation technology. It makes it possible to convert an oily extract into a powdered product, stabilises the key bioactives, and offers protection against oxidation of active ingredients, improving the shelf-life. It also allows for proven results at a low dose of 100mg to 150mg.

Zynamite®, meanwhile, is our patented, award-winning mango leaf extract for mental energy and cognitive performance. It's had great success as a natural alternative to caffeine because it activates brain waves in an almost identical pattern but it's a non-stim solution that doesn't have side effects like jitters and crashes. The challenge is that mangiferin, the key bioactive compound, is normally poorly water-soluble.

We used Smartek by Nektium to develop Zynamite® S, which is fully water-soluble, has a neutral taste, and is stable even at low pH. This makes it perfectly suited to innovative, functional beverages where the original nootropic might have struggled with solubility and taste. The solubility enhancement translates into significantly improved bioabsorption, with a human clinical study showing it achieved 2.4 times higher mangiferin absorption over 24 hours compared to the original. The study confirmed that this allows for a smaller, more convenient dose.

Clean-label and sensory neutrality are top priorities for many manufacturers. How does Smartek help address challenges related to taste, solubility, stability, and shelf life in botanical ingredients?

Smartek is all about using innovative combinations of cutting-edge technologies to address specific challenges for each individual botanical. The approach varies in each case depending on which enhancements the botanical requires, but ultimately the end goal is to open up new possibilities for highly efficacious, convenient and enjoyable new products using our natural botanicals

Looking ahead, how does Nektium plan to expand the Smartek platform? Are there upcoming botanicals or new functional categories where you see strong potential for Smartek-enabled innovation?

Smartek represents another important step forward in our ongoing commitment to combining science-based innovation with in-house manufacturing and quality control.

We have additional product launches using Smartek already in development and will continue to develop new, tailored combinations of technologies designed for specific botanicals. This includes the use of a unique double microencapsulation approach specifically designed for enhanced delivery, neutral sensory properties, and excellent dispersibility in powder formats, such as sachets and shakes.

Shraddha Warde

shraddha.warde@mmactiv.com