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DolCas Biotech on Curcugen, Bioavailability and the Future of Botanical Wellness

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As consumer demand for convenient, science-backed wellness products grows, ingredient manufacturers are exploring ways to take clinically studied botanicals beyond conventional dietary supplements and into functional foods and beverages. Curcugen, DolCas Biotech's full-spectrum turmeric extract, is an example of this shift, combining enhanced bioavailability with formulation versatility for applications ranging from functional honey to beverages and confectionery.

In collaboration with MÄ•nukora, Curcugen has been incorporated into a premium MÄ•nuka honey formulation alongside ginger and Sicilian lemon oil, highlighting the potential of botanical ingredients in everyday wellness products. The ingredient is supported by human pharmacokinetic research demonstrating significantly higher systemic exposure to curcuminoids compared with a conventional curcuminoid extract.

In this interview with NUFFOODS Spectrum Asia, KG Rao, CEO, DolCas Biotech, discusses the science behind Curcugen, the formulation challenges involved in incorporating turmeric extracts into food and beverage applications, the importance

of clinical evidence and regulatory compliance, and the growing opportunities for bioavailable botanical ingredients across the Asia-Pacific functional food and nutraceutical markets.

What was the rationale behind developing Curcugen for applications beyond conventional dietary supplements, and how do collaborations such as the one with MÄ•nukora reflect changing consumer preferences for functional foods and wellness products?

One of our objectives with Curcugen has always been to make clinically studied curcumin more accessible and convenient for consumers.

Traditional capsules and tablets certainly have their place, but they are not necessarily everyone's preferred way of taking supplements. In fact, consumer surveys have highlighted that a significant proportion of people experience some difficulty swallowing tablets or capsules.

We believe consumers increasingly appreciate wellness products that fit naturally into their daily routines, particularly when they are enjoyable and convenient to consume.

Curcugen® was developed to combine enhanced bioavailability with the natural characteristics of turmeric, including its native essential oils and other constituents, while offering a relatively mild sensory profile and formulation versatility.

Our collaboration with MÄ•nukora is a good example of this approach. By incorporating Curcugen into premium MÄ•nuka honey, we are demonstrating how a clinically studied botanical ingredient can become part of a familiar and enjoyable food format rather than being limited to a conventional supplement.

For us, it is about giving product developers more flexibility while offering consumers greater choice.

Human pharmacokinetic research indicates more than 50-fold greater bioavailability of total curcuminoids with Curcugen compared with a standard curcuminoid extract. Could you elaborate on the research methodology, key findings, and clinical evidence supporting this claim?

We wanted to evaluate Curcugen using a rigorous human pharmacokinetic study that examined not only curcumin absorption but also the absorption of other important curcuminoids and a biologically active metabolite.

The published study was a randomized, double-blind, two-way crossover trial conducted in healthy adult male volunteers, with 17 participants included in the pharmacokinetic analysis.

Curcugen® was compared with a conventional 95 per cent curcuminoid extract (C-95), using approximately equivalent doses of total curcuminoids. Blood samples were collected over 24 hours and analyzed using validated LC-MS/MS methods.

An important aspect of the study was that we evaluated free curcumin separately from total curcumin, along with demethoxycurcumin (DMC), bisdemethoxycurcumin (BDMC), total curcuminoids, and tetrahydrocurcumin (THC), a metabolite of curcumin.

The results were encouraging. Compared with C-95, Curcugen demonstrated:

- **39-fold greater exposure to free curcumin**, based on AUC, with a 16.1-fold higher peak concentration (Cmax).
- **49.5-fold greater AUC for total curcumin.**
- **43.5-fold greater AUC for total DMC.**
- **46.8-fold greater AUC for total BDMC.**
- **52.5-fold greater AUC for total curcuminoids.**
- **31-fold greater AUC for total tetrahydrocurcumin.**

These findings demonstrate a substantial improvement in systemic exposure compared with the reference extract under the study conditions.

We consider this an important part of Curcugen's scientific foundation. At the same time, bioavailability is only one aspect of ingredient performance, which is why we have continued investing in human research evaluating Curcugen in specific areas of health and wellness.

What are the key formulation challenges involved in incorporating turmeric-derived ingredients into foods and beverages, particularly regarding taste, stability, solubility, and bioavailability? How does Curcugen address these challenges?

Formulating turmeric extracts into foods and beverages can be challenging, particularly when it comes to taste, dispersion, stability, and achieving meaningful curcuminoid exposure at practical serving sizes.

Conventional highly concentrated curcuminoid extracts can have a pronounced taste and aroma and often exhibit poor water dispersibility, which may limit their use in certain food and beverage applications.

Our approach with Curcugen was somewhat different. Rather than focusing exclusively on purified curcuminoids, we developed a full-spectrum turmeric extract that retains naturally occurring components of the rhizome, including essential oils, polar resins, and other native constituents.

These naturally occurring components are an important part of Curcugen's distinctive composition, which we have developed to offer improved dispersibility and formulation versatility.

Curcugen is designed to be water-dispersible, with a relatively mild taste and aroma, making it easier to work with in a range of formulations. Its enhanced bioavailability may also provide flexibility when developing products with lower ingredient inclusion levels.

Of course, each application has its own technical requirements. Beverages, gummies, chocolates, and other foods differ in processing conditions, pH, moisture, and shelf-life expectations, so formulation and stability testing remain important.

Our goal is to work closely with product developers to help them incorporate Curcugen into formats that are both technically practical and appealing to consumers.

The MÄ•nukora Body Recovery & Gut formulation combines Curcugen with MGO 850+ MÄ•nuka honey, concentrated ginger, and Sicilian lemon oil. What considerations guided this formulation, and what evidence supports the proposed benefits of combining these ingredients?

As MÄ•nukora has shared with us, there is growing consumer interest in wellness products that offer transparency, natural sourcing, and a meaningful connection to the ingredients they contain.

We believe this formulation reflects that philosophy very well.

There is also an interesting traditional connection between honey and turmeric. Both have been used in Ayurvedic preparations for generations, and honey has traditionally been valued as a carrier for botanical ingredients.

From a formulation perspective, MÄ•nuka honey provides a distinctive base, while Curcugen contributes a clinically studied turmeric-derived ingredient. Ginger and Sicilian lemon oil complement the formulation's overall flavor and sensory experience.

What makes this collaboration particularly interesting to us is the opportunity to bring traditional botanical ingredients into a modern, convenient food format.

Although the individual ingredients have their own research backgrounds, we would distinguish that evidence from clinical validation of the finished combination. Further research would be needed to establish whether combining these particular ingredients produces additional or synergistic physiological benefits.

For us, the innovation lies in bringing together complementary ingredients in a format consumers can enjoy as part of their daily wellness routine.

Beyond functional honey, which food and beverage categories offer the greatest potential for Curcugen? What technical or regulatory considerations must manufacturers address when incorporating it into products such as ready-to-drink beverages, gummies, and functional confectionery?

We see considerable potential for Curcugen beyond conventional dietary supplements, particularly in ready-to-drink beverages, powdered drink mixes, protein shakes, gummies, chocolates, and functional confectionery.

Curcugen's distinctive advantage is that it combines enhanced bioavailability with the natural constituents of turmeric, including its essential oils and other native components. Its relatively mild sensory profile and water-dispersible characteristics make it suitable for exploring a variety of consumer-friendly delivery formats.

We also place considerable importance on safety and scientific validation. In addition to our published human pharmacokinetic and clinical studies, we conducted a comprehensive toxicological evaluation of Curcugen, published in *BioMed Research International* in 2022.

The research included genotoxicity testing, acute oral toxicity, and a 90-day repeated-dose toxicity study conducted in accordance with OECD guidelines. The results showed no evidence of genotoxicity under the tested conditions, an acute oral LDâ? â?? greater than 5,000 mg/kg body weight, and a 90-day NOAEL of 2,000 mg/kg body weight/day in rats.

Curcugen also has a self-affirmed GRAS determination in the United States for specified intended food applications. For international markets, including Europe, we recognize that regulatory requirements differ, and each intended application must be assessed against the applicable ingredient classification, use levels, and food regulations.

Our objective is to help customers develop innovative, convenient products while maintaining appropriate standards of quality, safety, and scientific support.

What are DolCas Biotech's plans for expanding Curcugen's commercial applications and market reach? How do you see demand for clinically supported, bioavailable botanical ingredients evolving in the Asia-Pacific region, particularly in the functional food and nutraceutical sectors?

Our work with Curcugen® is continuing on several fronts. We are investing in additional research while exploring new delivery formats that can make clinically studied botanical ingredients more convenient and enjoyable for consumers.

The collaborations with MÄ•nukora and Numin are encouraging examples of how Curcugen can move beyond traditional supplements, and we hope to build on these opportunities with other innovative brands.

We also see promising opportunities in the Asia-Pacific region, where botanical ingredients have a long history of traditional use and where there is growing interest in combining that heritage with modern scientific research and product innovation.

In our experience, customers increasingly want more than an attractive ingredient story. They want reliable quality, human clinical research, safety documentation, and practical formulation advantages.

Beyond Curcugen, we are exploring similar opportunities with other ingredients in our portfolio, including Morikol, our clinically studied marine collagen tripeptide ingredient, and D3Vance, our algae-derived vegan vitamin D3.

Ultimately, our objective is to keep developing and supporting ingredients that help our customers create differentiated products while meeting consumers' evolving expectations.