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The 
delivery format
space race

June 2025

CO NT EN TS



4 VIEWPOINT

Stellar supplements, cosmic convenience

From prebiotic-packed chews to sleep-enhancing saffron gummies and omega-3 powerhouses, today's formats blend fun, flavor and function for the health-curious, floats Managing Editor **Duffy Hayes**.

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Special delivery!

Cutting-edge tech like SMEDDS, microencapsulation and sustained-release systems are transforming the way nutrients like CoQ10, EPA and DHA are delivered. **Lisa Schofield** has the details.

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Exploring supplement delivery formats: Trends, benefits and innovations

Brands are balancing convenience, bioavailability and consumer preferences to redefine wellness, delivering the goods via classic capsules, vibrant gummies and dissolvable films, **Amanda Jepson** reports.

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Not all liposomes are equal: The power of validated nutrient delivery

Sebastian Balcombe explains how game-changing liposomal technology boosts bioavailability, protects nutrients and ensures those nutrients reach their intended targets.

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Stellar supplements, cosmic convenience

Capsules and powders will always have their devotees – I think about the real supplement lifers, who can cop handfuls of pills with ease or are unfazed at the prospect of swilling that early morning biosludge smoothie special.

What's important is that these loyalists swear by their routine's precision and potency. And with research exponentially expanding our understanding about ingredient efficacy, our industry continues to deliver to this hardcore crowd.

But the expanding universe of delivery format options today aims to capture the massive middle of the market – people who want to consume healthy things ... and if they taste good, they're hooked.

This demographic, craving convenience and delight, is driving the gummy market's 11.8% compound annual growth rate (CAGR) surge, expected to reach \$52.24 billion by 2030, [according to](#) Grand View Research.

I have a feeling my neighbor is in the bull's-eye of that target audience. She's an active, health-forward mom of three; and ever since she found out I work in dietary supplements, she always hits me up for advice on trendy ingredients. But never formats. Our conversations always end with her asking, "But can I get that in a gummy?"

It's easy to see why. Gummies fit people's busy lives – they're portable, tasty and fun. No water, no aftertaste, just a treat that feels like self-care. Unlike capsules or powders, which demand discipline, gummies invite exploration.

There's a lot of that exploratory spirit in the articles here, but rather than ingredients, the



innovation is in making the supplement-taking experience more enjoyable and efficacious.

Here's some stardust from the articles you're about to read. TopGum's fiber-based gummies cut sugar and enhance prebiotics, and the company's microencapsulated IronGum can mask metallic tastes. Activ'Inside's saffron gummies [improve sleep](#) via gut microbiota, backed by biomarkers. Concordix's soft chews rival gummies for palatability while delivering high-potency actives – like 20 gummies' worth of omega-3 EPA/DHA – in one bite. And properly validated and characterized liposomes are leading the expedition of improved efficacy.

These examples are just a small slice of the new delivery format frontier, where innovation meets bioavailability.

Catch a ride inside!



Duffy Hayes
MANAGING EDITOR



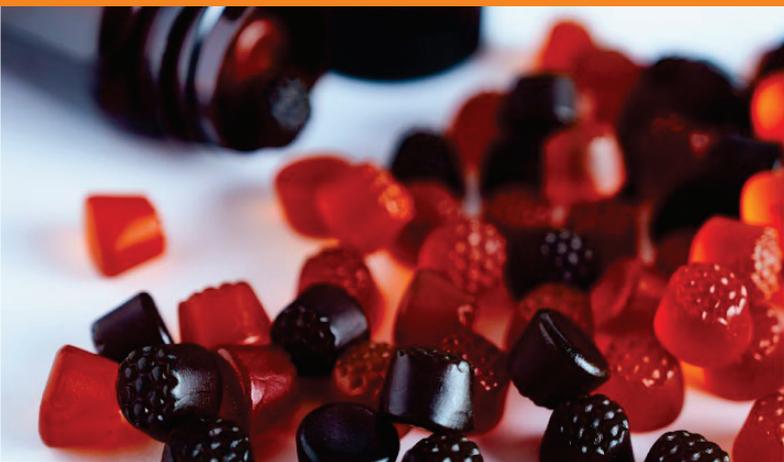
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Special delivery!

Explore how cutting-edge tech like SMEDDS and microencapsulation ensures every dose of CoQ10, EPA, DHA and more packs a powerful, bioavailable punch.

by Lisa Schofield

Just a few years ago, most cars on the road were either black, grey or white. Now, a wide range of colorful cars dots the highways. The point is, many people get tired of the “same old, same old” in things they use every day – and they’ll often engage enthusiastically if given a different option. Also when purchasing a vehicle, people expect to get their money’s worth, not a lemon.

These ideas hold true in dietary supplements, too, albeit on a much smaller scale. Consumers are drawn to formats beyond traditional pills and tablets, but also expect that the actives will get delivered into the gastrointestinal (GI) tract and be fully absorbed.

Delivering a full research-backed dosage for claimed benefits has not always been easy for brands to accomplish. Ben Yeap, director of innovation and science at dry ingredient specialist CoreFX Ingredients, agreed, “Many beneficial nutrients – regardless of their potential health benefits – face significant challenges entering systemic circulation through conventional delivery methods.”

And this is why technologically advanced delivery systems are so hot in the supplement marketplace – consumers want a variety of choices and also assurance that what they take will not be wasted. As a result, delivery system R&D (research and development) continues to see an uptick in activity.

[click to go!](#)



Chew on this

Consumers who find taking capsules and tablets to be laborious are prime customers for supplement “candy,” i.e., gummies and chews. This isn’t news, but today’s gummy isn’t yesterday’s Haribo knockoff.

Maité Jeanroy, marketing and communications director with service provider Activ’Inside, observed, “While gummies have long faced criticism for being high in sugar, poorly regulated and prone to faster degradation compared to traditional supplements, recent innovations are transforming the way they are perceived and used.”



Recently, her company’s Safr’Inside saffron gummy was [shown](#) to modulate gut microbiota and was correlated with improved sleep quality – both through objective measures (biomarkers and sleep tracking) and subjective assessments (self-reported improvements).

To reduce sugar or sugar alcohols for individuals concerned about blood sugar, contract manufacturer TopGum’s fiber-based matrix allows for sugar-free formulations while delivering natural sweetness from the fibers themselves, according to Jennifer Toomey, head of new product development in North America. “Fiber-based gummies can also effectively deliver ingredients like vitamins and adaptogens,” she said.

Studies have shown some active ingredients may offer better bioavailability because of their absorption in the mouth; for example, vitamin D [showed](#) to be twice as bioavailable in gummies compared to capsules.

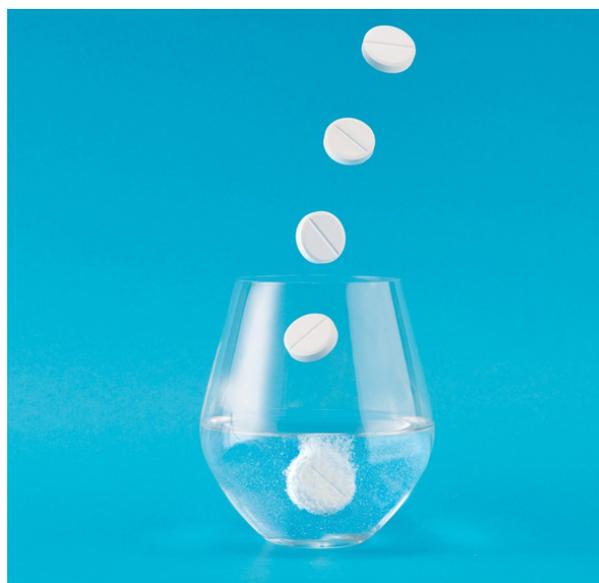
TopGum’s technology allows high-potency doses of vitamin C in each gummy for consumers who want an optimal dose but don’t want to commit to lots of pills. “Advanced formulations now allow for gummies to contain up to 600 mg of active ingredients per serving – usually contained in two capsules

– demonstrating that gummies can pack a powerful punch,” she noted.

Alt-gummies

Gummies aren’t the only delivery system innovation, as other nutri-treats continue gaining traction. For example, according to Michael Anthonavage, VP of innovation for contract manufacturer Vitaquest, the QFIZZ effervescent system enables custom wellness and sensory experiences with actives, flavor, color, texture and sound. He explained that QFIZZ is microencapsulated to resist premature reaction in traditional manufacturing environments, reducing overall costs and formulation complexities. “Some advantages of our QFIZZ technology system are uniform durable microencapsulation, improved dispersion of actives and flavors, and the option of using variable coatings to enhance compression of tablets while adding engaging sparkling, bubbly, frothy, foamy and fizzy sensations,” he claimed.

For some, gummies may not provide a desirable chew. Contract manufacturer Concordix offers a gelled emulsion made from a patented mechanical emulsification process that provides an ultra-soft (teeth-safe) chew.



Gummies aren't the only delivery system innovation, as **other nutri-treats continue gaining traction.**



According to Catherine Nardone, VP of global marketing at Concordix by Vitux, a [study](#) demonstrated a 44.9% increase in nutrient uptake with Concordix compared to traditional softgels.

She explained, "This technology enhances the payload capacity of oil-soluble nutrients for delivering high-potency supplements and allows for the combination of both oil- and water-soluble nutrients in one formulation. For example, one Concordix chew can deliver the same amount of EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) as 20 gummies combined, with the body absorbing more nutrients than other dosage forms."

Impish ingredients

Similarly, according to Yeap, CoreFX's CoreNhanced nutrient delivery system "enables us to incorporate essential nutrients into product formats previously considered

incompatible with oil-based compounds." It converts emulsified EPA- and/or DHA-rich fish or algal oils into powder form through a proprietary process that the company said uses minimal heat and near-zero oxygen exposure. He explained, "This precision is paramount, as both heat and oxygen are primary catalysts for lipid degradation, leading to oxidation, rancidity and diminished nutritional value."

As an example, the challenge of blending EPA and DHA with an electrolyte sports hydration beverage could not be solved due to taste interference. CoreNhanced, Yeap noted, has developed this concept, as well as a DHA chew.

Minerals like iron can also be somewhat persnickety to work with. TopGum's TopCap utilizes microencapsulation, which the company said helps to offer better control over taste, dosage, the location of ingredient release and the timing of its effects. The technology



read

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Can gummies really deliver all the supplement nutrition kids require? – article

Brightly colored, sweet and acidic gummy vitamins seem to check all the boxes – except when it comes to nutrition, Blake Ebersole contends.

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Liposomal delivery is a cutting-edge technology designed to **protect nutrients** from being degraded by the digestive system.

is suitable for ingredients that have a strong taste, like iron, which is one reason why TopGum launched IronGum in its Gummaceutical line last year. According to the company, the product provides high doses of iron without the metallic aftertaste, along with fructooligosaccharides (FOS) as a prebiotic fiber.

Scientific innovator Lubrizol's delivery system technologies allow for the encapsulation of sensitive and reactive ingredients, protecting them from degradation and ensuring they effectively reach their target site, according to Isabel Gómez, global marketing manager of the nutraceuticals division at Lubrizol. "These systems are particularly well-suited for minerals, vitamins and other bioactive compounds that benefit from enhanced stability and absorption," she said. "The technologies are leveraged in LIPOFER iron microcapsules and MAGSHAPE magnesium microcapsules to enhance the bioavailability, dispersibility and stability of active ingredients."

She added that Lubrizol's versatile delivery systems can be incorporated into gummies, soluble powder sachets and chewable tablets.

Sucrosomal technology from supplier Maypro was developed specifically for minerals (such as magnesium) to enhance their absorption through a process that allows for

higher absorption and improved bioavailability, according to Lauren Clardy, senior director of branded ingredients. The technology uses a protective matrix called a sucrosome to escort the minerals through the digestive tract and into the bloodstream. Clardy explained that sucrose esters act as emulsifiers, stabilizing the liposomal-like structure that encapsulates the microelement, thereby increasing its absorption and bioavailability. Because the mineral is encapsulated, its absorption is not impacted by the presence of other nutrients.

Sustainability

MicroActive is another delivery system technology used by Maypro that provides uniform absorption and a sustained-release profile in ingredients such as CoQ10 (coenzyme Q10), PQQ (pyrroloquinoline quinone) and resveratrol.

Ingredients are micronized and encapsulated using natural starches or polymers to fit the individual characteristic of each active ingredient. The micronization phase produces a period of rapid efficient exposure followed by the encapsulation phase, which produces a lengthy extended release. Absorption is further enhanced with carriers that assist the active to move through the intestinal wall.

Innovation

Clardy detailed, “Liposomal delivery is a cutting-edge technology designed to protect nutrients from being degraded by the digestive system, allowing for more effective absorption. Our liposomal technology safeguards nutrients, ensuring optimal absorption so your body can fully benefit from your supplements.”

For example, MicroActive CoQ10 is a complex of two B-cyclodextrin molecules and a CoQ10 molecule. One side of the molecule is fat-soluble and holds the CoQ10, while the other side is water-soluble and makes for efficient transport through the digestive system.

Also focusing on sustained delivery, and a one-and-done approach, is ingredient supplier Nutriventia. According to Vishal Shah, co-founder, the company’s delivery systems enhance the efficacy, stability and consumer appeal of nutraceutical ingredients by optimizing their absorption and usability. Nutriventia’s sustained-release technology ensures controlled, long-lasting effects, reducing the need for multiple doses. “This is particularly beneficial for actives with short half-lives, such as Prolanza (sustained-release ashwagandha [*Withania somnifera*] for stress support), CaffXtend (extended-release caffeine for balanced energy) and Melotime (sustained-release melatonin for improved sleep regulation),” Shah shared.

Nutriventia’s ingredients, she continued, are “gummy ready,” and the company’s gummy-ready platform adapts sustained-release and

taste-masking technologies to withstand the gummy manufacturing process.

Ingredient and delivery system provider Pharmako Biotechnologies Pty Ltd. has developed five forms of advanced drug delivery systems, which can be used in various applications depending on the material type and dosing format brands are seeking to produce. These systems include AquaCelle and LipiSpurse technologies;

PlexoZome and PlexoZome Pro; as well as Compressible Powdered Oils (CPO), which can be used in conjunction with AquaCelle to optimize an ingredient’s bioavailability, Tanja Kokkins, communications and brand manager, suggested.

For example, Pharmako’s AquaCelle utilizes oil substances to create absorbable water-loving micelles in the form of micelles via a self-microemulsifying drug delivery system (SMEDDS). Kokkins explained, “Self-assembly occurs when molecules organize into complex structures like a smart 3D puzzle. They are directed to their proper sites by attraction and repulsion forces generated from their electrical charges.

This means the molecules can assemble spontaneously into ordered spheres.”

Many consumers are already all-in on the practice of taking supplements to gradually improve their well-being and support specific health concerns. It’s up to the industry to give them more motivation to experiment with effective new products to break up the monotony. ■



Lisa Schofield is a veteran writer and editor who got her start interviewing rock stars for national music magazines. She now writes and edits content for B2B media and suppliers in the natural health product industry. She has served as editor for Vitamin Retailer and Nutrition Industry Executive, and prior to that as associate editor for Whole Foods.



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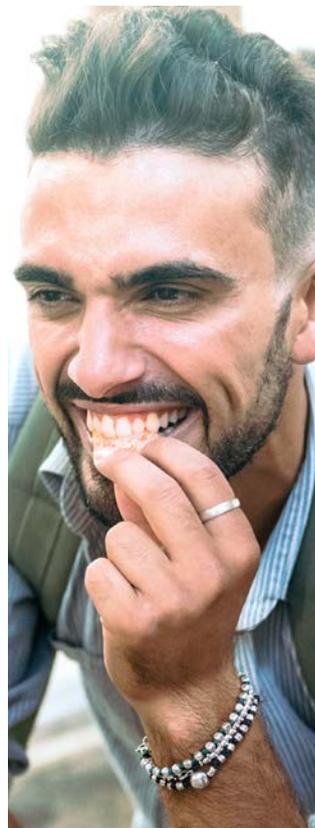
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Exploring supplement delivery formats: **Trends, benefits and innovations**

From trusty tablets to trendy gummies, the world of nutritional supplements is transforming to meet diverse consumer needs.

by Amanda Jepson

When it comes to dietary supplement and nutritional product delivery formats, consumer preferences are evolving, with a growing demand for new, innovative and convenient options. Convenience, however, is a subjective factor, varying from person to person. While some consumers are eager to try the latest trending format, others remain loyal to their preferred method of supplementation. As a result, the industry continues to develop diverse delivery formats to meet these differing needs.

Traditional formats: Tablets and capsules

Tablets and capsules feature the benefits of enhanced stability and ease of transport, without concerns about taste or the need for flavor masking. However, many people do not do well with swallowing several pills a day. Dosage size can cause further complications, requiring efficacious dosing to be split between several pills or even a single daunting one (seemingly approaching the size of a baby carrot).

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The **surge in collagen supplementation** has driven a major uptick in powder usage, as this format is ideal for **high-dose supplements** (5-10 g per serving).

According to 2022 [data](#) from FMCG Gurus, capsules and tablets still reign supreme as the most preferred delivery format among consumers. However, a clear shift toward alternative delivery systems is underway, particularly among younger demographics.

Gummies: Popular but not perfect

It is no secret that gummies experienced a huge rise in popularity since the introduction of Yummi Bears in 1997. Nutrition Business Journal (NBJ) revealed in a proprietary 2022 report that preference for the gummy format was notably higher in younger consumers – with 43.3% of Gen Z shoppers choosing gummies, compared with only 18.9% of Baby Boomers.

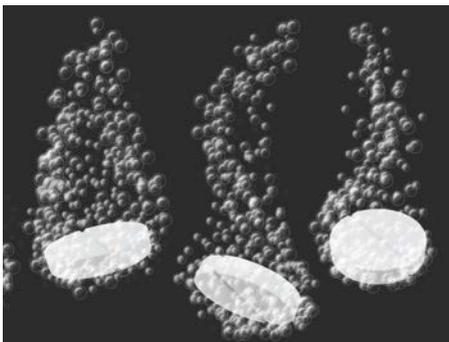
Some of the limitations that come with the gummy delivery format are:

- **Dose load constraints:** Standard gummy dose loads range from 100-500 mg.



- **Ingredient stability:** Some ingredients may not be well-suited to the heat, pH and moisture levels in the gummy format.
- **Manufacturing costs/complications:** Due to gummies' more complicated formulation requirements, they come with their own set of costs and complications in manufacturing.

Furthermore, many consumers don't like the idea of taking in the extra sugar or other ingredients that go into making the



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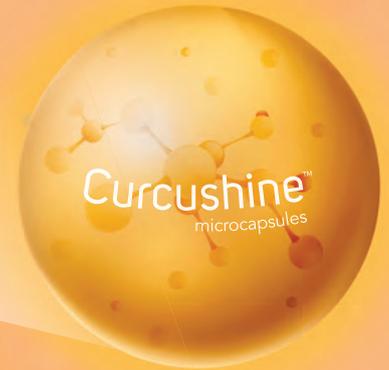
The supplement delivery system party – video

Different demographics put their own spin on supplement taking – so said a panel of experts at SupplySide in Las Vegas.

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Effervescent tablets provide a balance between **portability and dose flexibility**, typically ranging from 1-10 g per tablet.

soft, squishy, nutraceutical “treats.” Vegan consumers may have even more of a challenge finding the same variety of options due to the formulation changes required when using plant-based gelling agents, although these ingredients are becoming more accessible.

Powders: A versatile alternative

The surge in collagen supplementation has driven a major uptick in powder usage, as this format is ideal for high-dose supplements (5-10 g per serving). Powders often offer greater flexibility in dosing and formulation compared to gummies or tablets.

While carrying a large tub of powder isn’t always convenient, stick packs and sachets provide a portable, single-serving solution, making them ideal for travel. However, taste remains a key consideration – flavor masking may be required to improve palatability. Consumers seeking minimal additives tend to gravitate back to capsules or tablets when powders contain excess sweeteners or fillers.



Effervescent tablets: A hybrid approach

Effervescent tablets provide a balance between portability and dose flexibility, typically ranging from 1-10 g per tablet. Some of this space is taken up by effervescent agents, but this format is ideal for ingredients with high bioavailability.

This format has largely been dominated by hydration and immune support (think Nuun and Airborne). But other options are being offered, including greens, vitamins, apple cider vinegar and nutricosmetics. With increasing innovation in this category, expect more diverse applications to emerge.

Orally dissolvable films (ODFs): Compact, convenient

ODFs are lightweight, portable and don’t require water, making them an excellent choice for on-the-go consumers. Most people are familiar with Listerine breath strips, but now similar technology is being applied to multivitamins, sleep aids, electrolytes and nutricosmetics.



ODFs, though, have dose limitations, typically ranging from 10-150 mg per strip, making them effective only for low- to moderate-dose ingredients. Additionally, taste and flavor compatibility play a crucial role in formulation success.

Liposomal technology: Enhancing absorption

Liposomal technology is ideal for nutrients sensitive to stomach acid or enzymatic breakdown. While liposomal encapsulation is more expensive, it may provide multiple benefits:

- Protects ingredients from degradation.
- Improves absorption and bioavailability.
- Reduces gastrointestinal (GI) discomfort.

Supplement manufacturer Aurora Nutrascience works exclusively in liposomal ready-to-drink (RTD) products, including some interesting formulations addressing

menopause, joint health, sleep and cognitive support, among others. Liposomal products don't have to come in RTD format, though; several options are available in capsules, soft gels and tinctures.

Supplement delivery's diverse future

As consumer preferences evolve, so do supplement delivery formats. While capsules and tablets remain dominant, gummies, powders, effervescent tablets, ODFs and liposomal formulas are all gaining traction. The key to success for brands lies in understanding the target audience's needs and offering delivery formats that balance convenience, efficacy and consumer appeal.

With continued innovation and advances in bioavailability, the supplement industry will likely see even more novel formats emerge in the coming years. What's next? We'll be watching closely. ■



Amanda Jepson is president at Biova LLC, a privately held company based in Johnston, Iowa, focused on producing water-soluble eggshell membrane (WSEM) ingredients for the dietary supplements, skin care and pet care industries.

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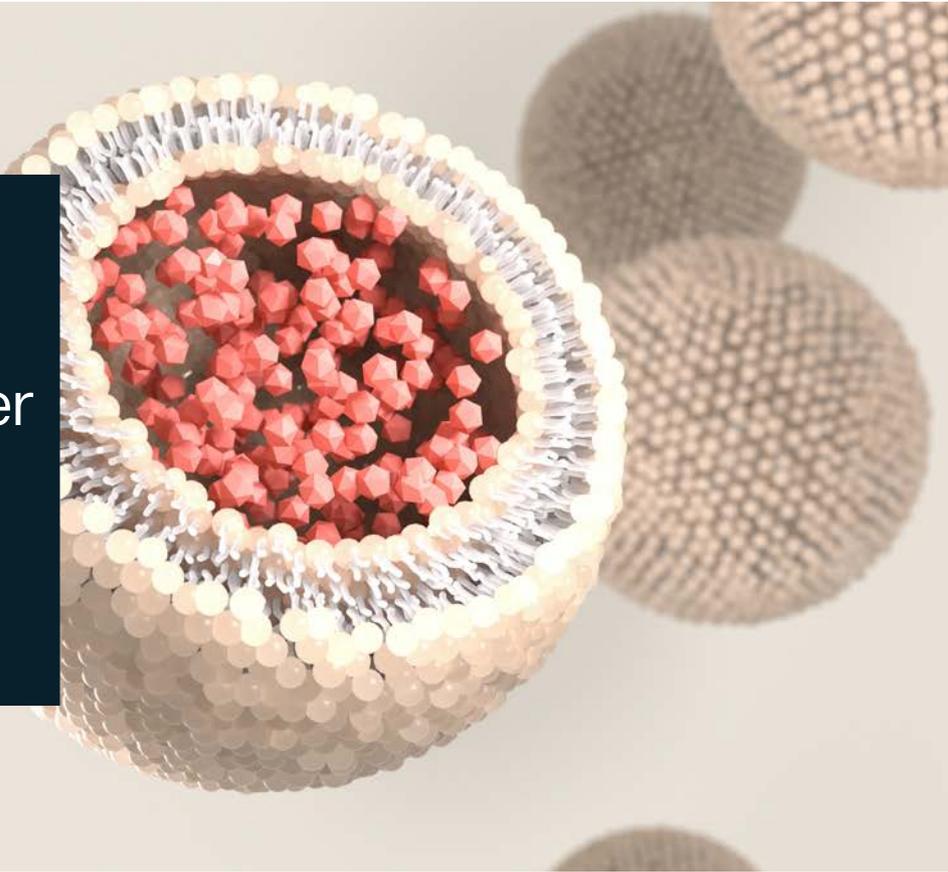
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Not all liposomes are equal: The power of validated nutrient delivery

by Sebastian Balcombe



Cutting-edge liposomal approaches tackle the challenge of poor bioavailability, ensuring key nutrients reach their target in the body with enhanced stability and absorption.

T rue liposomal technology is changing the natural products industry, redefining how key nutrients and bioactives can be delivered to the body. As innovation pushes the boundaries of supplement efficacy, liposomes may continue to stand out as one of the most effective delivery technologies available today.

However, true liposomes must be properly validated and characterized – something many companies fail to do. Without this confirmation, there's no guarantee the ingredient is a true liposome.

Liposomes for bioavailability enhancement

One of the most significant challenges in supplementing with natural products is poor bioavailability, leading to poor efficacy. Bioavailability is the amount of the ingredient or compound ingested that gets through the gastrointestinal (GI) tract and into the bloodstream. Many natural compounds suffer from poor bioavailability due to their poor fat or water solubility and/or an inability to break down in the digestive system.

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Liposomes may **dramatically enhance the effectiveness** of natural ingredients by **helping them reach their intended targets** in the body.

Liposomes aim to solve this problem by encapsulating active ingredients in a phospholipid bilayer. This delivery system [enables improved bioavailability](#) through:

- **Improved permeability:** Small-intestine cell membranes primarily consist of a lipid bilayer, structurally similar to liposomes, which facilitates efficient absorption of liposome-encapsulated ingredients.
- **Enhanced solubility:** Ingredients with poor solubility in the stomach can be wrapped inside a liposome for protection and to greatly improve how well they're absorbed in the small intestine. The nano-size of liposomes also improves solubility characteristics.
- **Increased stability:** Encapsulation in a liposome can help protect ingredients from degradation by stomach acid and enzymes.

Simply put, liposomes may dramatically enhance the effectiveness of natural ingredients by helping them reach their intended targets in the body. This provides consumers with products that potentially work better than traditional ingredients. It can also decrease the dose of an ingredient, so a consumer does not have to take as much to be effective.

The industry's liposomal problem

While liposomal supplements are increasingly popular, the term "liposomal" is often misused. Many products on the market claim to be liposomal but lack the structural integrity to deliver real benefits. Some so-called "liposomal" products are nothing more than emulsions or poorly formulated blends that fail to encapsulate the active ingredient effectively.

This is where rigorous validation comes into play. Without proper validation, companies and

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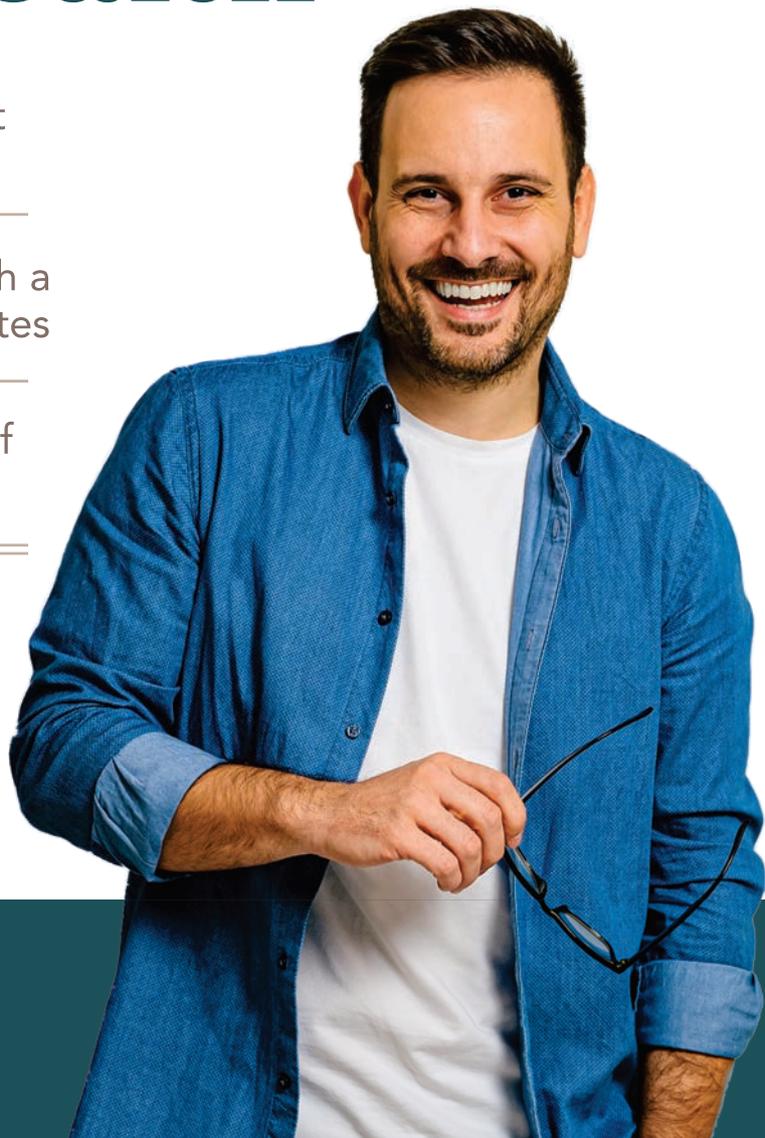
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True liposomal technology requires **advanced formulation** and **testing**.

consumers alike are left guessing whether a product truly delivers on its promises.

Six essential validation techniques

True liposomal technology requires advanced formulation and testing to ensure that the phospholipid structures are correctly formed and function as intended. Proper validation involves multiple analytical techniques to

confirm the presence, size, stability and encapsulation efficiency of liposomes.

To ensure liposomal integrity and functionality, six key validation techniques are used:

Cryo transmission electron microscopy

(CryoTEM): Provides high-resolution images of the inside of the liposome to view the layers, confirming their formation.

Dynamic light scattering (DLS):

Measures the average size of liposomes in a formulation, ensuring they are within the optimal range for improved bioavailability.

Zeta potential analysis:

Assesses the encapsulation efficiency of liposomes, and measures how much ingredient is inside the liposome, ensuring potency and efficacy versus how much is outside in the mixture.

Scanning electron microscope:

Provides a view of the outside of the liposome to ensure the shape is correct and to make sure it has not been broken or disrupted.

Powder X-ray diffraction:

Confirms various components of the formulation and is used to ensure no crystallization is occurring on the ingredient.

Optical microscope:

Shows how easily the formulation disperses.

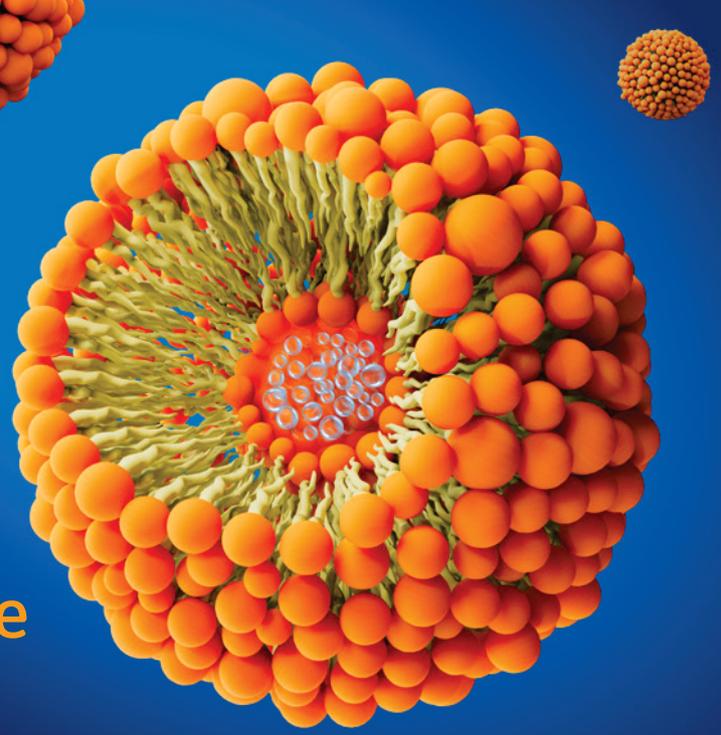


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The hottest supplement trends in 2024 – video

The supplement sectors best positioned for future success are included in this must-watch.



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Technology

Through rigorous third-party testing, validated liposomal technology helps confirm that consumers receive the benefits they expect.

The future of liposomal delivery

Innovations in liposomal technology are coming about through changes in the processes and ways in which they are being formulated. With numerous methods for formulating liposomes, next-generation technologies have emerged that [demonstrated](#) significantly superior performance in in-vitro studies, showing enhanced bioavailability, greater stability and more.

Adding liposomes to other technologies may invite new benefits. For example, adding a liposomal ingredient to an extended release beadlet not only opens up the potential liposomal benefits of greater bioavailability, but also may extend the benefits of any actives.

Consumers deserve products that deliver what they promise. As liposomal supplements become more mainstream, companies must commit to real science and real validation. Anything less is a disservice to industry and, most importantly, to the people who rely on these products to help support their well-being. ■



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