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From capsules to customised nutrition: The innovation wave in supplements

Dr Sanjay Agrawal, Scientific Advisor of Alkomex GBN Pharma Group US, explores the most significant innovations in nutraceutical delivery systems, their business implications, and how companies are leveraging them to engage health-conscious consumers

The nutraceutical industry has moved far beyond tablets and capsules. Today, innovation in delivery formats is reshaping how consumers experience wellness products. Driven by evolving lifestyles, personalisation, and a demand for convenience, nutraceutical brands are experimenting with novel ways to make health supplements not just functional, but enjoyable and accessible. From gummies and powders to advanced technologies like liposomal encapsulation and 3D-printed nutrition, delivery formats are becoming a differentiating factor in a competitive market.

This article explores the most significant innovations in nutraceutical delivery systems, their business implications, and how companies are leveraging them to engage health-conscious consumers.

The shift in consumer expectations

Traditionally, nutraceuticals were consumed in standardised pill or capsule form—reliable but uninspiring. However, as wellness becomes intertwined with lifestyle and identity, consumers are seeking formats that align with their routines, tastes, and preferences. According to recent market surveys, factors such as convenience, palatability, and experience often influence purchase decisions as much as efficacy.

This shift creates both opportunities and challenges for businesses. While innovation in delivery formats can command premium pricing and improve brand differentiation, it also requires significant investment in R&D, regulatory approval, and supply chain adaptation.

Key innovative delivery formats

1. Gummies and chewables

Among the most popular alternatives to pills, gummies have captured the imagination of both children and adults. The global gummy supplements market has been growing at double-digit rates, fueled by their candy-like appeal.



◆ **Business advantage:** Gummies lower the barrier to entry for first-time supplement users and appeal to younger demographics.

◆ **Challenges:** Maintaining stability of active ingredients in gummy formulations, particularly heat- and light-sensitive compounds, remains complex.

Chewable tablets, lozenges, and jelly strips also fall into this category, offering flavor-driven engagement alongside health benefits.

2. Effervescent tablets and powders

Effervescent formats dissolve in water, creating a fizzy, flavorful drink. These formats offer rapid bioavailability and allow higher doses compared to gummies.

◆ **Consumer appeal:** Convenience, hydration, and the perception of a refreshing health beverage.

◆ **Market use:** Widely used for vitamin C, electrolytes, and multivitamin blends.

◆ **Business perspective:** Effervescent open doors for nutraceutical companies to compete with functional beverage markets, blending supplement benefits with lifestyle-oriented consumption.

Stick-pack powders and single-serve sachets also appeal to on-the-go consumers who prefer flexibility over fixed-dose tablets.

3. Functional beverages

The convergence of nutraceuticals and the beverage industry is one of the strongest growth trends. Nutrient-fortified waters, herbal infusions, and ready-to-drink protein or collagen beverages embody this shift.

◆ **Consumer appeal:** Beverages are associated with everyday consumption and are easier to integrate into daily routines than supplements.

Examples: Probiotic drinks, adaptogen-infused teas, or nootropic energy shots.

◆ **Business insight:** Functional beverages often command higher margins and enjoy strong crossover potential in mainstream retail.

The challenge lies in ensuring product stability during storage, as beverages present formulation hurdles such as microbial control and ingredient solubility.

4. Liposomal encapsulation

While gummies and powders appeal to convenience, liposomal technology speaks to efficacy. Liposomes are microscopic vesicles that encapsulate active ingredients, protecting them from degradation and enhancing absorption.

◆ **Why it matters:** Many nutraceuticals—like curcumin, vitamin D, and omega-3 fatty acids—struggle with low bioavailability. Liposomes can significantly improve delivery.

◆ **Business outlook:** Premium positioning. Liposomal nutraceuticals cater to informed consumers who value advanced science in wellness products.

Though cost-intensive, liposomal delivery is expected to be a differentiator in the high-end nutraceutical segment.

5. Orally dissolving films (ODFs) and strips

Thin strips that dissolve on the tongue provide an ultra-convenient alternative to pills. They are portable, discreet, and require no water.

◆ **Consumer draw:** Perfect for travelers, children, or those with pill fatigue.

MARKET TRENDS

◆ **Applications:** Popular in energy boosters, vitamins, and sleep aids (such as melatonin).

◆ **Business advantage:** ODFs support micro-dosing formats and fast onset, enabling nutraceutical brands to tap into quick-relief categories.

6. Sprays and drops

Sublingual sprays and liquid drops enable direct absorption into the bloodstream through oral mucosa, bypassing the digestive system.

◆ **Consumer appeal:** Quick absorption, easy to use, and suitable for those with digestive issues.

◆ **Market insight:** Particularly gaining traction in categories like vitamin B12, CBD, and herbal extracts.

These products appeal to a health-savvy demographic seeking efficacy without the bulk of pills.

7. Personalised and 3D-printed nutrition

Perhaps the most futuristic format, 3D-printed nutraceuticals allow customisation of nutrient profiles, shapes, and even flavors based on individual health needs.

◆ **Consumer impact:** Aligns with the rising demand for personalized wellness.

◆ **Business model:** Subscription-based services offering tailored daily nutrition packs or 3D-printed supplements.

◆ **Challenges:** High cost of technology, regulatory hurdles, and limited scalability at present.

However, as digital health platforms and nutrigenomics gain ground, this format could redefine the nutraceutical industry's future.

Market and business implications

◆ **Rising R&D and production costs:** Innovative delivery systems require investment in new machinery, formulation expertise, and stability testing. While costs are high, early adopters can secure strong market differentiation.

◆ **Regulatory considerations:** New formats often face unclear regulatory frameworks. For instance, gummies and functional beverages may fall into overlapping categories of food and supplements, requiring careful compliance.

◆ **Branding and differentiation:** Delivery format has become a branding element in itself. A brand positioned around liposomal technology communicates science and efficacy, while one focused on gummies emphasises fun and lifestyle integration.

◆ **Consumer education:** Novel formats require education to build trust. For instance, liposomal supplements need a clear explanation of their benefits compared to standard capsules. Similarly, consumers must be reassured of the efficacy of low-dose formats like strips.

The road ahead

The future of nutraceutical delivery formats lies at the intersection of science, convenience, and personalization. We can expect three key directions:

1. Hybrid formats: Combining multiple approaches- such as effervescent gummies or beverage powders with liposomal encapsulation- for both fun and efficacy.

2. Personalisation at scale: AI-driven platforms analyzing consumer health data to recommend customised supplement packs or 3D-printed formulations.

3. Sustainability: Eco-friendly packaging and clean-label ingredients will become integral to delivery innovations.

Conclusion

For the nutraceutical industry, innovation in delivery formats is not just a technical upgrade- it is a business strategy. As consumers view wellness as part of their identity and lifestyle, companies must create products that are effective, enjoyable, and tailored. Gummies, beverages, liposomal capsules, and even 3D-printed supplements illustrate a broader shift: health is no longer about swallowing pills, but about integrating wellness seamlessly into daily life. Brands that master this balance between science and consumer experience will not only differentiate themselves but also lead the next wave of growth in the global nutra market.

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