B2B

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Natural Sweeteners / The Impact of Glycation on the Skin / Advanced Extraction Technologies / Delivery Format Engineering Determines Bioavailability / Vitafoods Asia 2026 / New Restrictions on Citral and Benzyl Salicylate

Editor's Word

In this Issue, we explore the growing role of natural sweeteners in food supplements and functional foods, their metabolic effects, and new strategies for sustainable weight management. We also examine skin glycation and how an inside-out approach may help support healthier, more youthful skin.

Innovation continues across the industry with advances in extraction and delivery technologies designed to improve the bioavailability of modern nutraceuticals. You'll also find the latest research on probiotics, bioactive peptides, botanical ingredients for male hair health, omega fatty acids, and other emerging ingredient technologies driving product development.

As a Media Partner of Vitafoods Asia, we bring you the latest event highlights alongside industry news from leading companies. This issue also features upcoming B2B events and important regulatory updates affecting cosmetic manufacturers in the EU, helping you stay informed on the latest market developments.

We hope this edition provides valuable insights and fresh inspiration for your business and product development.

Daria Šurić,
EDITOR-IN-CHIEF

Bimonthly digital magazine for industry professionals
in health, nutrition and cosmetics sector

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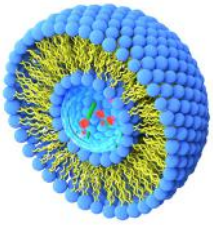

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Natural Sweeteners in Food Supplements and Functional Foods: Metabolic Impact

As demand for sugar reduction continues to grow, natural sweeteners have become key ingredients in food supplements and functional foods, offering sweetness with minimal effects on blood glucose levels. Beyond their role as sugar substitutes, emerging evidence suggests that compounds such as stevia, erythritol, and monk fruit may influence insulin responses, gut microbiota composition, and overall metabolic health, creating new opportunities and challenges for product formulation.

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Natural sweeteners are substances with a sweet taste that are derived directly from natural sources and obtained through appropriate processing. They are primarily produced from plants or microorganisms and encompass a diverse group of compounds, including sucrose, sugar alcohols, terpenoid glycosides, and certain polyphenols.

Natural sweeteners are commonly used as alternatives to sucrose in addressing the global escalation of obesity and type II diabetes[1,2]. While these compounds are frequently marketed as metabolically inert, recent research suggests they may actively influence energy homeostasis and the composition of the gut microbiota. Specifically, substances like xylitol, erythritol, and D-allulose have emerged as promising candidates that may offer favorable metabolic outcomes compared to traditional sugar substitutes[3]. Furthermore, emerging plant-derived extracts such as monk fruit are increasingly investigated for their potential to modulate systemic inflammation and lipid profiles without inducing the glycemic spikes associated with caloric sweeteners[4].

Beyond these metabolic benefits, sweetener blends are often used to overcome individual sensory limitations and enhance the technological performance of food matrices[5]. However, this industry-wide shift toward sugar alternatives requires a rigorous evaluation of their long-term health implications, as recent meta-analyses indicate that the metabolic pathways involved may be more complex than previously anticipated[6]. In particular, interactions between these compounds and sweet taste receptors can influence insulin secretion and glucose absorption, potentially leading to varied metabolic responses depending on an individual's baseline health[7]. Furthermore, recent investigations suggest that these sweeteners may interact significantly with the gut microbiota, altering metabolic signaling and energy-harvesting processes[8].

Impact on blood sugar

Natural sweeteners typically exhibit low glycaemic potency, which prevents the rapid glucose fluctuations commonly induced by sucrose and high-fructose corn syrups. By providing a stable glycemic

Figure 1 Graphical abstract
Taken from: *Dragomir N, Grigore D-M, Pogurschi EN. Beyond Sugar: A Holistic Review of Sweeteners and Their Role in Modern Nutrition. Foods. 2025; 14(18):3182. https://doi.org/10.3390/foods14183182*

response, these alternatives offer a strategic advantage in formulating products specifically tailored for metabolic management and weight control[9]. However, the clinical evidence base supporting these metabolic benefits remains equivocal, particularly regarding their long-term efficacy in chronic glycemic management[10]. Moreover, emerging data indicate that certain non-nutritive sweeteners may induce microbial dysbiosis, which could counteract their intended glycemic advantages by disrupting host metabolic signaling pathways[11].

Impact on insulin blood levels

While many non-nutritive sweeteners are frequently marketed as inert regarding insulin kinetics, recent human trials indicate that their impact on endocrine responses varies significantly depending on the chemical structure of the compound[12]. For instance, while certain stevia formulations have shown an acute stimulatory effect on C-peptide release and early-phase serum glucose, other clinical trials report no significant divergence in insulin responses when compared to control groups[13]. These inconsistent findings may be partially attributed to the activation of sweet taste receptors within the gastrointestinal tract, which can trigger cephalic phase insulin release independently of circulating glucose levels[14].

Moreover, preclinical models suggest that compounds like stevia may directly facilitate insulin secretion from pancreatic β-cells by stimulating the TRPM5 receptor[15], although these mechanisms do not consistently manifest across all mammalian species or experimental conditions[16]. In contrast, other research has demonstrated that daily stevia consumption fails to significantly alter glucose tolerance tests in healthy human cohorts[17]. Conversely, randomized controlled trials indicate that while steviol glycosides may show a significant effect on fasting blood glucose levels, they frequently demonstrate no discernible impact on long-term glycemic markers such as HbA1c[18].

Most common natural sweeteners in food supplements in effervescent tablet form

In these applications, steviol glycosides and monk fruit extracts are frequently favored due to their high sweetening intensity and stability in aqueous environments[19]. Additionally, the rapid dissolution properties of these glycosides facilitate the efficient delivery of bioactive constituents without compromising the textural or sensory integrity of the formulation. Moreover, the metabolic fate of these compounds differs significantly, as steviol glycosides remain undigested until they undergo microbial fermentation in the colon[20,21]. where the resulting metabolites may contribute to the regulation of glucose metabolism and potential prevention of metabolic disorders[22,23]. The complex phytochemical profile of *Stevia rebaudiana*, including flavonoids and phenolic compounds, further enhances these functional benefits through anti-inflammatory and antioxidant activities[24]. Specifically, these

metabolites can inhibit digestive enzymes such as α-amylase and α-glucosidase, thereby slowing carbohydrate digestion and promoting sustained glycemic control.

Most common natural sweeteners in food supplements in water-soluble sachets form

In these delivery formats, erythritol is often utilized as a bulk sweetener due to its high solubility and cooling effect, which masks the lingering bitterness sometimes associated with intense natural extracts. Furthermore, the synergistic combination of erythritol with steviol glycosides leverages the technical advantages of both compounds, ensuring both an acceptable sensory profile and enhanced metabolic stability in rapid-dissolution formulations[25]. Recent studies further underscore that such combinations offer a non-cariogenic and non-fermentative alternative to sucrose, aligning with consumer demand for healthier, low-calorie dietary additives[26,27].

Furthermore, the integration of these natural alternatives into portable supplement formats aligns with ongoing efforts to curb the rising global incidence of metabolic syndrome and related chronic conditions[22]. Technological advancements, including structural modification and enzymatic glycosylation, are currently being implemented to mitigate the sensory limitations of these sweeteners, such as delayed sweetness onset or bitter aftertastes, thereby improving consumer compliance[28].

Most common natural sweeteners in food supplements, orosolubile sachets form

In these rapid-delivery formats, the selection of high-purity rebaudiosides is essential to achieve a clean-label profile, as the direct interaction with the oral mucosa necessitates a precise sweetness intensity that avoids lingering organoleptic defects. Additionally, the incorporation of carrier agents like isomalt or specific polyols can modulate the dissolution kinetics within the oral cavity, effectively stabilizing the volatile flavor profiles of the glycoside blend. Beyond sensory optimization, these carriers help minimize the hygroscopicity of orosoluble powders, which is critical for maintaining shelf stability in high-humidity environments.

Opportunitye s

The strategic substitution of traditional carbohydrates with compounds like erythritol, stevia, and monk fruit juice concentrate offers a robust framework for formulating products that mitigate glycemic spikes while addressing the consumer demand for health-conscious, non-cariogenic supplements[29,30]. Ongoing development in this sector emphasizes the importance of biocatalytic synthesis strategies to produce stable, sucrose-like taste profiles that maintain functional integrity without relying on artificial additives[31]. Furthermore, the optimization of these natural sweetener profiles necessitates a multidisciplinary approach that balances physicochemical stability with consumer sensory preferences, ultimately fostering innovation in the development of functional, sugar-reduced product matrices[32].

Conclusion

The shift toward natural high-potency sweeteners represents a pivotal transition in the food and supplement industry, effectively addressing the dual requirement for metabolic safety and enhanced consumer adherence[33,34]. Future research must prioritize overcoming industrial production bottlenecks through metabolic pathway engineering and sustainable extraction techniques to ensure these compounds remain economically viable alternatives to conventional sucrose[35].

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B2B Events Calendar 2026

This is an overwiev of the B2B live events during 2026

Vitafoods Asia

B2B Nutramedic &Cosmetics **MEDIA PARTNER**

2-4 September, Bankok
https://www.vitafoodsasia.com/

FOOD MATTERS live

22-23 September, Rotterdam
https://foodmatterslive.com/rotterdam

natexpo

28-29 September, Lyon
https://natexpo.com/

CPHI by informa | MILAN 6-8 OCT 2026

6-8 October, Milan
https://www.cphi.com/europe/

COSMETORIUM

21-22 October, Barcelona
https://www.cosmetorium.es/en/

SupplySide Global by informa

26-30 October, Las Vegas
https://www.supplysideglobal.com/

Fi Europe

B2B Nutramedic &Cosmetics **MEDIA PARTNER**

17-19 November, Frankfurt
https://www.figlobal.com/europe/

in-Vitality

25-26 November, Milan
https://www.in-vitality.it/

Weight Loss, Upgraded: The Ingredient Innovations Changing What's Possible.

A new class of delivery-enhanced, multi-mechanism actives is giving formulators the clinical credibility — and consumer appeal — the category has long needed.

The GLP-1 drug revolution has done something unexpected: it has made the dietary supplement industry more relevant, not less. As semaglutide and tirzepatide dominate headlines, a parallel conversation is growing louder — about cost, side effects, long-term sustainability, and the well-documented rebound weight gain that follows discontinuation.
The global weight-management supplement market, already valued at USD 35.8 billion in 2024 and projected to reach USD 127.9 billion by 2034, is being reshaped by consumers seeking natural ingredients that work alongside GLP-1 medications, reduce reliance on them, or help maintain weight once they stop. With more than one billion adults worldwide now living with obesity, the stakes have never been higher — and four ingredients are meeting the moment.

Trpti™ (OEA): The Endogenous Lipid Mediator That Activates the Body's Own Weight-Control Switch

Trpti™ is a bioavailable form of oleoylethanolamide (OEA) delivered via LipiSperse® technology — protecting OEA from enzymatic degradation so it reaches the intestine intact. OEA activates PPAR-α to promote lipolysis and stimulates GLP-1 release via GPR119, curbing food intake.

A 2026 randomized, double-blind, placebo-controlled trial (57 adults, 12 weeks, 300 mg/day) published in Gut Microbes Reports found that Trpti™ significantly enriched Akkermansia muciniphila and Faecalibacterium prausnitzii — both associated with improved metabolic health — and produced significant weight loss in participants with a BMI under 35.

A pilot study also confirmed a rapid increase in endogenous GLP-1 after food ingestion.

ActivAMP® (Gynostemma pentaphyllum) — The Exercise Enzyme

ActivAMP® is a standardized Gynostemma pentaphyllum extract that activates AMPK — the metabolic enzyme normally triggered by exercise.

In a double-blind, randomized, placebo-controlled study published in the Journal of Human Nutrition and Dietetics, 117 overweight adults taking 450 mg/day for 16 weeks showed statistically significant reductions in total body weight, BMI, total fat mass, and gynoid fat mass compared with placebo. Blood markers, including triglycerides and TNF-α, also improved — indicating benefits beyond body composition alone.

Slimaluma® (Caralluma fimbriata) — Helps suppress appetite

Slimaluma® is backed by three human clinical trials and has FDA GRAS status for use in meal replacement products. Slimaluma® has properties useful for weight management, with the most significant being hunger control. This appetite suppression leaves Slimaluma® uniquely positioned to support the body’s weight management needs.

When adults exercise and burn more calories, they often need to guard against hunger-induced overconsumption of extra calories. Slimaluma® helps suppress appetite, providing adults with the ability to maintain a consistent caloric intake.

By influencing the hypothalamus and serotonin levels, Slimaluma® promotes greater satiety and reduced anxiety, making it the ideal ingredient for mood and appetite control.

BioBerb® — High-Bioavailability Berberine

BioBerb® is a cold-water dispersible berberine made from purified Berberis aristata, formulated with LipiSperse® technology.

For the best results, berberine often needs high doses of up to 2g daily, which can cause tolerability problems and side effects like digestive issues. In a pharmacokinetic study currently under peer review, a single dose of 188 mg of BioBerb® achieved 802 ng/mL of total berberine in blood plasma—an impressive outcome at a much lower dose than usual. Berberine activates AMPK, influences the gut microbiome, inhibits DPP-4 (slowing GLP-1 breakdown), enhances insulin sensitivity, and reduces fat cell formation. This makes BioBerb one of the most versatile ingredients for weight management with multiple mechanisms of action.

Sources: Grand View Research; Precedence Research; Gut Microbes Reports (2026); Journal of Human Nutrition and Dietetics (2022); NutraIngredients; Nutraceutical Business Review; WholeFoods Magazine; WHO.

* The Food and Drug Administration has not evaluated these statements. This product is not intended to diagnose, treat, cure, or prevent any disease.

The Science of Sustainable Weight Management

CLINICALLY STUDIED INGREDIENTS

Trpti™
Endogenous Lipid Mediator

ActivAMP
The Exercise Enzyme

BioBerb®
High-Bioavailability Berberine

Slimaluma®
Appetite Suppression

saanroo
Wellness Proven

The Impact of Glycation on the Skin and an Inside-Out Approach to Mitigating it

Glycation is a hidden driver of skin ageing. It occurs when sugars bind to collagen and elastin, forming AGEs that reduce skin firmness, elasticity and radiance. Combined with oxidative stress, glycation accelerates wrinkles and skin sagging. A balanced diet, antioxidant-rich foods, healthy lifestyle habits and targeted skincare may help slow this process and support healthier-looking skin.

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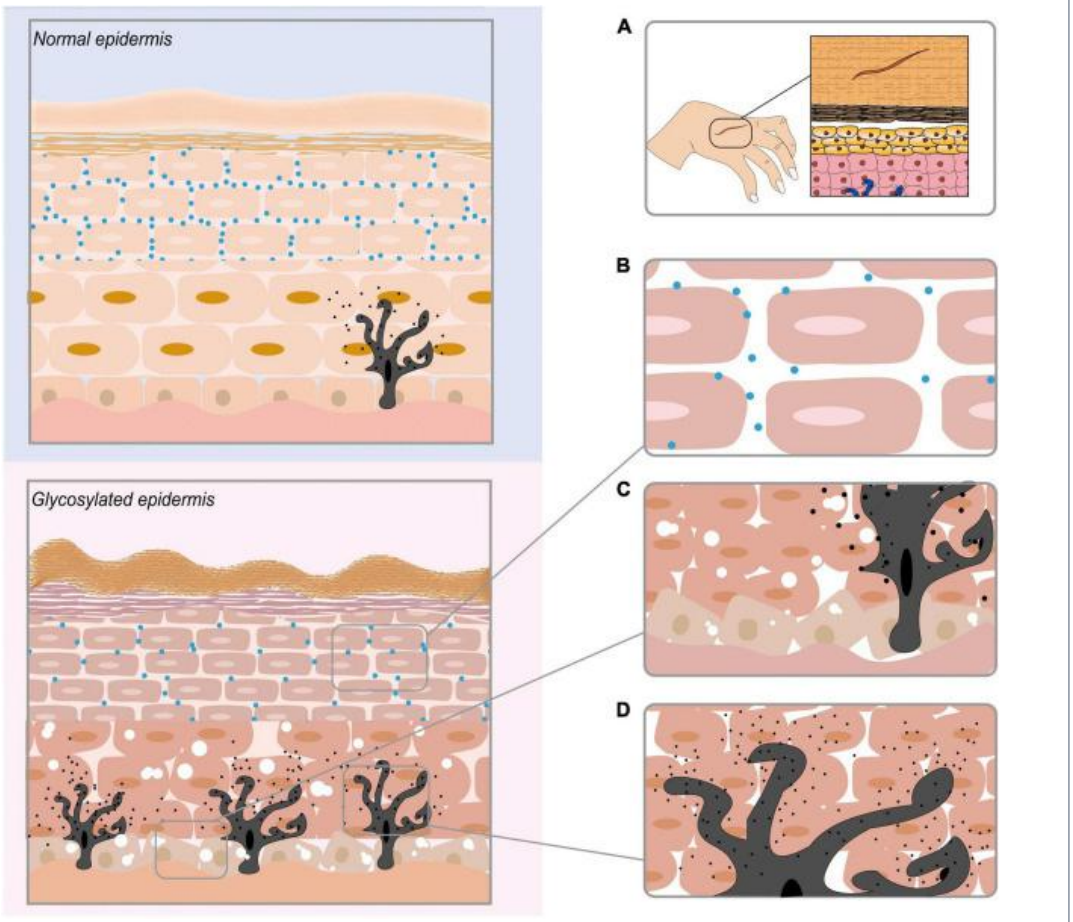
When discussing skin ageing, we most often think first of the sun, pollution, stress and the natural loss of collagen. However, there is another, often overlooked mechanism quietly acting beneath the surface: glycation. In simple terms, excess sugar in the body affects not only health and metabolism, but can also visibly accelerate skin ageing. Sugar molecules bind to important structural proteins, especially collagen and elastin, making these fibres stiffer, more brittle and less functional. The consequences include fine lines, wrinkles, loss of firmness, reduced skin bounce, sagging and a tired, greyish complexion.

Glycation is a natural, non-enzymatic biochemical process in which sugars and reactive carbonyl compounds bind to proteins, lipids or nucleic acids without enzymatic control. The final products of this process are called advanced glycation end products, or AGEs. Over time, AGEs accumulate in tissues and disrupt the normal function of cells and proteins. In the skin, they are particularly important because they affect long-lived structural proteins of the dermis: collagen, which gives the skin firmness and support, and elastin, which enables elasticity and the skin's ability to return to its original shape after stretching.

Collagen is the most abundant protein in the skin. It forms a network that gives the skin structure, density and resilience. Elastin allows the skin to return to its original form after facial movement, stretching or pressure. When sugars bind to these fibres, cross-links are formed that make them rigid. Such collagen is harder to remodel, is replaced more slowly by new fibres and is less resistant to mechanical

Figure 1 The effect of AGEs on the epidermis of the skin



(A) AGEs obstruct skin wound healing. **(B)** AGEs reduce the contents of ceramide (CER) and cholesterol (CHOL) in the epidermis, eventually leading to a reduction in skin lipid content. **(C)** AGEs destroy the keratinocyte cell structure in the epidermis. **(D)** AGEs promote the production of melanin in melanocytes. Taken from: *Chen CY, Zhang JQ, Li L, Guo MM, He YF, Dong YM, Meng H, Yi F. Advanced Glycation End Products in the Skin: Molecular Mechanisms, Methods of Measurement, and Inhibitory Pathways2.*

and environmental stress. Glycation is therefore not merely a superficial aesthetic issue, but a process that alters the very architecture of the skin.

Glycation is most often associated with elevated blood glucose levels, which is why it is more pronounced in people with insulin resistance, diabetes or a diet rich in sugars and refined carbohydrates. However, it is not limited to metabolic disorders. AGEs also form in healthy individuals, naturally accumulate with age and are accelerated by diet, UV radiation, smoking, alcohol, stress, lack of sleep and pollution.

An important part of the mechanism involves RAGE receptors - receptors for advanced glycation end products. When AGEs bind to these receptors, oxidative stress, inflammatory processes and degradation of the extracellular matrix are promoted. This creates a vicious circle: more AGEs mean more inflammation and free radicals, while increased oxidative stress further damages collagen, elastin and the epidermal barrier. For this reason, glycation does not only cause wrinkles; it can also contribute to

What accelerates glycation?	What happens in the skin?	How can it be seen on the skin?
A diet rich in sugars and refined carbohydrates	More AGEs are formed and bind to collagen and elastin	Loss of firmness, wrinkles, skin sagging
UV radiation, especially UVA	Increases oxidative stress and collagen breakdown	Premature ageing, uneven tone, deeper wrinkles
Smoking, alcohol and pollution	Increase inflammation and the formation of free radicals	Greyish complexion, lower skin resilience, roughness
Natural ageing	AGEs gradually accumulate in tissues	Less elasticity, thinner and more sensitive skin
Lack of sleep, stress and a sedentary lifestyle	Poorer glucose regulation and higher metabolic burden	Tired appearance, slower recovery, loss of radiance

Inside-out strategy	Cosmetic substances / active ingredients	How can they help with skin glycation?
Reducing oxidative stress	Vitamin C, vitamin E, ferulic acid, resveratrol, green tea extract, niacinamide	Neutralise free radicals that intensify glycation and collagen breakdown. Help maintain a more even tone, radiance and skin resilience.
Protecting collagen and elastin	Carnosine, aminoguanidine, alpha-lipoic acid, peptides	Carnosine and aminoguanidine are being studied as anti-glycation ingredients because they may help reduce AGE formation. Peptides can support the appearance of skin firmness and elasticity.
Stimulating skin renewal	Retinoids, retinal, retinol, bakuchiol, peptides	Promote epidermal renewal and support collagen synthesis. Useful because glycation reduces the skin's ability to regenerate efficiently.
Strengthening the skin barrier	Ceramides, cholesterol, fatty acids, niacinamide, panthenol	Restore the protective barrier, reduce water loss and make the skin more resistant to stressors such as UV radiation, pollution and inflammation.
Hydration and preserving skin fullness	Hyaluronic acid, glycerin, urea, beta-glucan, ectoin	Hydrated skin appears smoother and more resilient. These ingredients help reduce dryness, roughness and loss of fullness that may be associated with glycation damage.
Photoprotection as a key preventive measure	Broad-spectrum SPF filters, antioxidants in daily skincare	UV radiation accelerates AGE formation and collagen breakdown. Daily SPF is one of the most important steps in preventing glycation-related ageing.
Evening out the complexion and restoring radiance	Vitamin C, niacinamide, azelaic acid, licorice, resveratrol	Help improve a greyish, tired and uneven complexion that may appear when the skin is burdened by oxidative stress and AGEs.

lower skin resilience, dryness, roughness and slower recovery after irritation. (Figure 1)

Visible signs of glycated skin often resemble accelerated, premature ageing. The skin may lose elasticity, fullness and firmness, particularly on the cheeks, around the mouth and along the jawline. Fine lines become deeper because rigid collagen fibres tolerate facial movement less effectively and do not renew efficiently. The complexion may appear lifeless, greyish or uneven because AGEs change the quality of the dermal matrix and the skin's ability to reflect light. The skin may also become more fragile, more sensitive to UV radiation and pollution, and more prone to persistent redness, dryness and a compromised barrier. Slower wound healing is another important consequence, as glycated collagen makes normal tissue regeneration more difficult.

In popular dermatological and aesthetic communication, the term "sugar sag" is sometimes used to describe skin laxity associated with chronic exposure to sugar and accelerated AGE formation. Although simplified, the term captures what happens in the skin: fibres that should be flexible, firm and capable of renewal become stiff, weaker and less functional.

The inside-out approach is based on the idea that skin is cared for not only externally, but also through metabolism. The first step is more stable glycaemia. This means reducing added sugars, sweetened drinks, sweets, white flour and highly processed foods, while increasing the intake of fibre, vegetables, legumes, whole grains, quality proteins and healthy fats. Meals that combine protein, fibre and fats usually lead to a slower rise in blood glucose than meals based almost entirely on refined carbohydrates.

The second step is reducing dietary AGEs. They are produced in larger amounts during frying, grilling, roasting at high temperatures and the formation of a dark, browned crust. Boiling, steaming, stewing, soups and slow-cooked dishes produce fewer AGEs. Marinating foods with lemon, vinegar or herbs before heat treatment may also be a useful strategy. The goal is not to eliminate roasted foods, but to reduce chronic exposure to highly processed, heavily browned and sugar-rich meals.

The third step is a diet rich in antioxidants and polyphenols. Berries, green leafy vegetables, green tea, cocoa, olive oil, rosemary, citrus fruits, nuts and herbs help defend against oxidative stress. This matters because glycation and oxidation reinforce each other. Some compounds, such as carnosine, alpha-lipoic acid, rosmarinic acid, resveratrol and green tea extract, show anti-glycation or antioxidant potential in experimental and partly clinical research. Nevertheless, supplementation should not replace fundamental habits: a high-quality diet, regular movement, good sleep and sun protection.

It is advisable to combine the inside-out approach with targeted skincare.

Antioxidant serums with vitamin C, vitamin E, ferulic acid, niacinamide, resveratrol or green tea may help neutralise free radicals that drive glycation-related damage. Retinoids, derivatives of vitamin A, are important because they stimulate skin renewal, improve texture and support collagen synthesis.

Peptides, such as signal peptides in firming formulas, can further support the appearance of elasticity and skin density, especially in combination with retinoids, antioxidants and good hydration.

Carnosine and aminoguanidine are particularly often mentioned in anti-glycation skincare. Carnosine is a dipeptide with antioxidant and anti-glycation potential and is used in some formulas intended to protect collagen from sugar-induced damage. Aminoguanidine is a known inhibitor of AGE formation in experimental models; however, in cosmetic practice, claims should be made carefully and should rely on formulation quality, evidence and safety of use. In other words, an anti-glycation product may be a useful addition, but it is not a replacement for SPF, retinoids, antioxidants and a balanced lifestyle.

Hydration is also important. Well-hydrated skin is more resistant to stressors and better maintains its barrier function. Ingredients such as hyaluronic acid, glycerin and ceramides help retain water, reduce transepidermal water loss and strengthen the skin's protective layer. Because glycation can compromise the barrier and contribute to dryness and roughness, hydrating care is not merely an aesthetic addition, but part of a strategy to preserve skin resilience.

Sun protection remains essential. UV radiation, especially UVA, accelerates oxidative stress, collagen breakdown and AGE formation. Therefore, daily broad-spectrum sun protection, ideally SPF 30 or higher, is one of the most important measures against glycation-related ageing. An anti-glycation routine without photoprotection remains incomplete.

Professional treatments can additionally help improve skin texture, tone and firmness. Microneedling, chemical peels, laser treatments and collagen-stimulating procedures can support skin remodelling and reduce visible signs of ageing. However, such treatments should be individually adapted to skin type, phototype, barrier condition and any dermatological issues. They do not reverse glycation, but they can improve skin quality when they are part of a broader strategy.

A practical anti-glycation routine can be simple. In the morning: a gentle cleanser, an antioxidant serum, a moisturiser with ceramides or hyaluronic acid and broad-spectrum SPF. In the evening: cleansing, a retinoid or another skin-renewing ingredient, if needed a peptide or anti-glycation formula with carnosine, and a moisturiser to restore the barrier. In sensitive skin, active ingredients should be introduced gradually and without overuse, because an irritated barrier always ages faster.

The most important point is to understand that glycation cannot be completely stopped. It is part of natural ageing. However, its pace can be slowed. Because glycated collagen fibres are difficult to repair, prevention is more important than trying to correct damage afterwards. The best results come from combining daily habits: less added sugar, more stable glycaemia, more antioxidants, less highly processed and heavily browned food, regular physical activity, not smoking, moderate alcohol intake, sufficient sleep, good hydration, barrier-supportive skincare and daily SPF.

Glycation connects nutrition, metabolism and visible skin ageing. It shows that the skin does not age only from the outside in, but also from the inside out. The inside-out approach does not replace dermatological care, retinoids, antioxidants or sun protection; it complements them. The skin is a metabolically active organ. If we want to preserve its elasticity, radiance, firmness and capacity for renewal, an anti-ageing strategy should begin on the plate, in food preparation methods and in everyday lifestyle habits.

This approach does not work as a one-time solution, but as a long-term strategy. Diet and lifestyle habits reduce the internal formation of AGEs, while cosmetic substances applied externally help neutralise oxidative stress, preserve the barrier, stimulate renewal and protect collagen. It is precisely the combination of metabolic balance and targeted skincare that makes the inside-out approach the most logical model for mitigating skin glycation.

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Fine Foods Expands its Pharma Business: Sofar Acquisition Completed and €50M+ Pharma Hub Launched

Fine Foods has expanded its manufacturing network through the acquisition of Sofar S.p.A. and a major investment in its Brembate pharmaceutical site. Together, these initiatives increase production capacity, strengthen the competitiveness in global healthcare markets, and reinforce the Group's integrated CSDMO model.

On 12 June 2026, Fine Foods Group completed the acquisition of 100% of Sofar S.p.A. from Alfasigma S.p.A., a global pharmaceutical company based in Italy with more than 75 years of history. The transaction, closed for a cash consideration of €23.4 million, coincides with the full operational launch of Fine Foods' recently expanded pharmaceutical hub in Brembate, near Bergamo in Lombardy, Italy, following an industrial investment of more than €50 million.

Through this dual strategic move, the Italian Contract Solutions Development & Manufacturing Organization (CSDMO), listed on Euronext STAR Milan, is expanding its production capacity and diversifying its technology portfolio to compete more effectively in the global pharmaceutical market.

Strategic manufacturing impact

Sofar's integration into Fine Foods' industrial footprint strengthens the Group's expertise and expands its production capacity in liquid and semi-solid pharmaceutical forms. The agreements maintain production continuity and establish a long-term commercial partnership with Alfasigma, reinforcing the Group's role as an integrated reference partner for major multinational companies.

At the same time, Fine Foods is advancing internal growth by expanding its state-of-the-art manufacturing site for solid oral pharmaceutical forms. The facility has received official production authorisation from the Italian Medicines Agency (AIFA) and complies with European GMP requirements. With the addition of the new integrated industrial building, covering approximately 10,000 square metres and specialising in tablet production and blister packaging, Fine Foods' Pharma division now spans 26,100 square metres.

From an engineering standpoint, the new Brembate plant is designed for highly regulated markets.

It includes 140 km of data cables, an air-handling capacity of 340,000 m³/h, 716 fire sprinklers and 21,000 LED lamps. The installed machinery is state-of-the-art and highly innovative. Through this addition and the integration of Sofar's site in Trezzano Rosa, near Milan, the Group has increased its workforce to more than 1,000 employees, giving the international market access to a flexible, diversified production network.

CSDMO positioning and cross-market convergence

Founded in 1984, Fine Foods serves international markets by moving beyond the traditional CDMO model and positioning itself as a solutions provider. Operating exclusively under contract for a loyal international customer base, Fine Foods is a strategic end-to-end partner providing comprehensive support that covers scientific and formulation development using its Research and Development (R&D) laboratories, scale-up, industrial production and final packaging.

The Group operates globally as an "Invisible Expert", working behind the scenes to strengthen the identity and effectiveness of customer brands through complex, flexible development processes. Strategic diversification across the Pharma, Nutra and Cosmetics business units, and their gradual integration, is a core organisational factor, designed to create commercial synergies and transfer technological knowledge and operational expertise across health and beauty industries.

This cross-sector convergence results into high-value-added industrial solutions, which were recently presented at leading global trade fairs. In March, Fine Cosmetics made its official debut at Cosmoprof Worldwide Bologna, highlighting its **solid stick cosmetics** and integrated Beauty In&Out solutions.

Most recently, during Vitafoods Europe in Barcelona, the Group strengthened its integrated vision of wellbeing, combining nutraceutical and cosmetic expertise, by presenting new 'In&Out' solutions. These include formulations designed to support metabolism in line with GLP-1 trends, alongside a holistic approach to longevity and skin wellbeing, reflecting an integrated interpretation of how contemporary wellbeing is evolving. To complete the range, the Group introduced cutting-edge concepts based on internal efficacy studies of the Biotic3® line.

Responsible governance and development strategy

To ensure the high standing required by global partners, the Group's development is supported by rigorous governance principles that extend beyond financial performance. As a Benefit Corporation since 2021 and a signatory to the United Nations Global Compact, Fine Foods follows a clear strategy focused on process decarbonisation, energy efficiency and optimised use of production resources.

Its medium- to long-term investment approach balances infrastructure development with financial strength by improving workflow efficiency, advanced process automation, energy transition through on-site renewable energy generation, and operational efficiency across its manufacturing sites. The Group's focus on human capital, supported by technical and continuous training programmes aligned with its corporate code of ethics and transparency principles, remains central to strengthening its quality-driven growth and resilience in the global pharmaceutical market.

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Advanced Extraction Technologies Driving Better Bioavailability in Modern Nutraceuticals

These standout innovations - CPO® oil conversion technology, PlexoZome® liposomal delivery systems, LipiSperse® and AquaCelle® - illustrate how advanced formulation science is reshaping the future of functional ingredients.

AUTHOR:
The NMC Editorial team

In the dynamic nutraceutical industry, the effectiveness of an active ingredient is no longer defined solely by its composition, but increasingly by its **delivery system**. Poor solubility, instability, and limited absorption remain key challenges that restrict the full potential of many bioactive compounds. To address these limitations, next-generation formulation technologies are transforming how lipids, vitamins, and sensitive actives are delivered - significantly improving bioavailability, stability, and functional performance.

CPO® technology: converting oils into compressible, stable powders

Oily bioactives such as omega-3 fatty acids, plant oils, and carotenoids have long posed formulation challenges due to their instability and poor compressibility. Traditional micro-encapsulation methods often create fragile structures with a solid outer shell surrounding a liquid core. Under mechanical stress, these systems can rupture, leading to **leaching, mottling, sticking, and reduced product stability**.

CPO® (Compressible Powdered Oils) technology, developed in Australia in a TGA-licensed, cGMP-compliant facility, offers a fundamentally different approach.

Instead of encapsulating oil in a brittle shell, CPO® uses **engineered silica particles that adsorb and immobilise oil within a structured matrix**. This results in a free-flowing, compressible powder with a unique dual affinity structure - hydrophobic internally and hydrophilic externally.

The benefits are significant:

- Conversion of liquid oils into stable, free-flowing powders
- High surface area enabling increased oil loading capacity
- Excellent compressibility for tablet manufacturing
- Improved dissolution and dispersion in final formulations
- Enhanced shelf stability with reduced oxidation risk
- Lower sensory issues such as aftertaste and reflux

CPO® technology is compatible with a wide range of actives, including fish and algal oils, CLA, evening primrose oil, astaxanthin, citrus oils, lavender oil, and CBD.

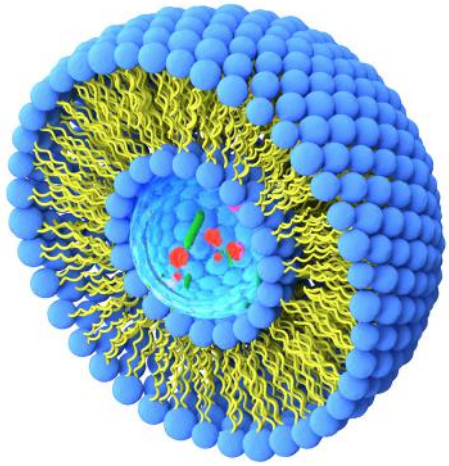
Compared to conventional micro-encapsulation, CPO® offers improved functionality, better processing versatility, and potential enhancement of bioavailability due to increased dispersibility and surface exposure of active compounds.

PlexoZome®: genuine liposomes for superior absorption

While CPO® addresses lipid conversion in solid systems, **PlexoZome® technology focuses on optimizing liquid delivery through advanced liposomal structures**.

Liposomes are spherical vesicles composed of phospholipid bilayers that closely mimic human cell membranes. This structural similarity allows them to encapsulate both hydrophilic and lipophilic compounds while enhancing transport across biological

Figure 1 Liposome



membranes.

PlexoZome® liposomes are distinguished by their **validated, true bilayer structure**, confirmed using advanced imaging techniques such as TEM and Cryo-TEM. Unlike conventional emulsions or phospholipid blends, these are scientifically verified liposomes engineered for performance and stability.

Key technological features include:

- Measurable particle size distribution using Dynamic Light Scattering (DLS)
- Zeta potential control to enhance stability and prevent aggregation
- Customisable particle size for formulation and regulatory needs
- Protection of sensitive ingredients from gastric degradation
- Improved buccal and intestinal absorption pathways

This results in significantly enhanced bioavailability and functional delivery of actives such as vitamin B12, vitamin D3, vitamin C, glutathione, hyaluronic acid, phosphatidylcholine, collagen, and nicotinamide riboside (NR).

PlexoZome® systems are available as ready-to-use raw materials for capsules, powders, and liquid formulations, supporting streamlined product development without additional processing requirements.

LipiSperse®: enhancing water dispersion of lipophilic actives

Many nutraceutical ingredients with proven health benefits suffer from one common challenge: poor water solubility. Compounds such as curcumin, resveratrol, carotenoids, and palmitoylethanolamide (PEA) are highly lipophilic, which can significantly limit their absorption in the gastrointestinal tract.

LipiSperse®, a patented technology developed by Pharmako Biotechnologies, was specifically designed to overcome this barrier by transforming lipophilic powders and crystalline ingredients into highly water-dispersible forms. Unlike traditional approaches that often require large quantities of carriers and excipients, LipiSperse® achieves effective dispersion while maintaining an exceptionally high active load - typically around **90% active ingredient and only 10% technology carrier**.

The technology works by coating lipophilic crystals and modifying their surface properties. While the core active remains unchanged, the particle surface becomes hydrophilic, allowing the ingredient to disperse rapidly in aqueous environments. This improved dispersion increases contact with absorptive surfaces in the gastrointestinal tract, thereby enhancing bioavailability. LipiSperse® also provides some protection against the acidic gastric environment, helping sensitive compounds remain available for absorption.

Benefits of LipiSperse® technology

Key advantages include:

- Enhanced dispersion in water-based systems
- Improved absorption and bioavailability of lipophilic compounds
- High active loading with minimal carrier requirements
- Greater formulation flexibility
- Compatibility with a wide range of delivery formats
- Improved functionality in powders, beverages, gels, and gummies

By converting poorly dispersible actives into water-compatible ingredients, LipiSperse® enables formulators to create innovative dosage forms that were previously difficult to achieve, including powdered drinks, effervescent tablets, direct-to-mouth sachets, liquid shots, oral gels, and functional foods.

Clinical evidence supporting improved bioavailability

The effectiveness of LipiSperse® has been demonstrated in multiple pharmacokinetic and clinical studies. Enhanced absorption has been reported for several commercially available ingredients utilizing the technology, including:

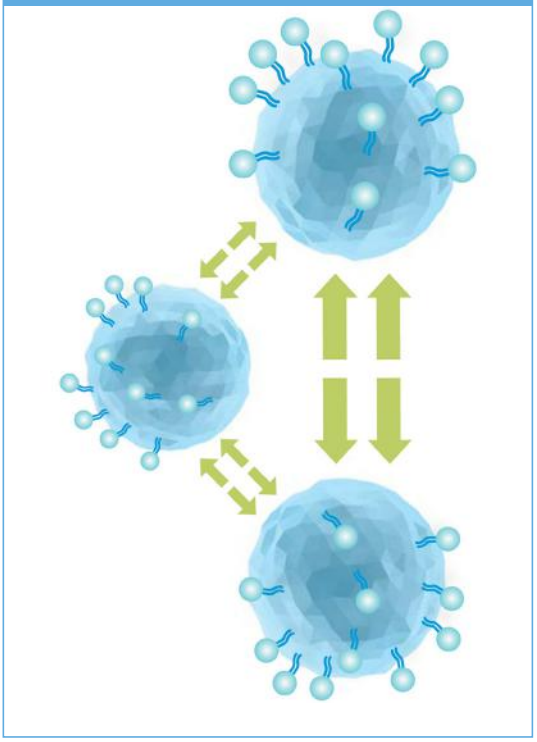
- **HydroCurc®** (curcumin)
- **VeriSperse®** (trans-resveratrol)
- **Levagen®+** (palmitoylethanolamide)

Published studies have shown significant improvements in bioavailability compared with standard formulations, highlighting the importance of dispersion technology as a strategy for improving the efficacy of lipophilic nutraceutical ingredients.

AquaCelle®: micellar delivery technology for lipophilic nutrients

While liposomal systems encapsulate nutrients within phospholipid bilayers and dispersion technologies improve water compatibility of powders, an-

Figure 2 LipiSperse repulsive forces



other highly effective strategy for enhancing the absorption of fat-soluble compounds is the use of micellar delivery systems.

AquaCelle® is a patented Self-Emulsifying Delivery System (SEDDS) developed by Pharmako Biotechnologies to optimize the absorption of lipophilic nutrients in liquid formulations. Upon contact with water, AquaCelle® spontaneously forms microscopic emulsions that subsequently organize into micelles-structures naturally used by the human body to absorb dietary fats and fat-soluble nutrients.

Because the gastrointestinal tract is primarily an aqueous environment, poorly water-soluble compounds often face significant absorption barriers. AquaCelle® addresses this challenge by dramatically increasing the surface area available for interaction with intestinal absorption mechanisms, facilitating more efficient uptake into systemic circulation.

How micellar delivery improves bioavailability

Micelles are microscopic spherical structures with a lipophilic core and a hydrophilic outer layer. In AquaCelle® formulations, the active ingredient is incorporated into the micellar core, allowing fat-soluble nutrients to remain dispersed within the water-based environment of the digestive tract. The resulting micelles are typically between 0.1 and 40 microns in diameter, supporting efficient transport and absorption.

Clinically demonstrated absorption benefits

Human pharmacokinetic studies have demonstrated significant improvements in nutrient absorption when AquaCelle® technology is used:

- Up to six-fold higher bioavailability for omega-3 fish oils
- Approximately three-fold higher bioavailability for Coenzyme Q10
- Absorption comparable to ubiquinol while maintaining improved formulation stability
- Approximately three-fold higher bioavailability for lutein

These improvements can allow formulators to reduce dose size while maintaining efficacy, potentially improving consumer compliance and convenience. AquaCelle® may also reduce common issues associated with oily supplements, such as fishy reflux, and enables the incorporation of oily actives into water-based formulations.

Figure 3 AquaCelle® water emulsion

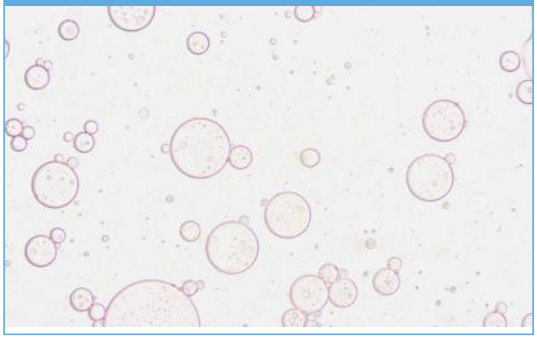
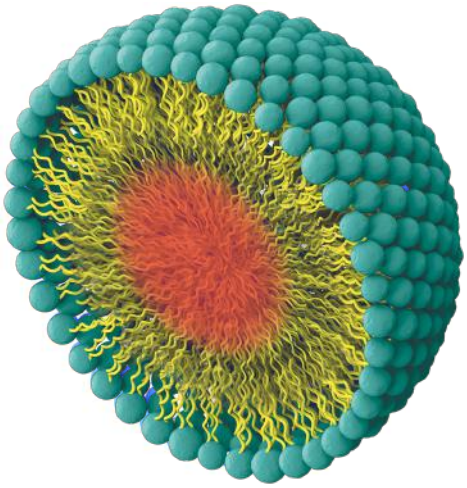


Figure 4 Liposome



Formulation opportunities

AquaCelle® expands formulation flexibility by enabling highly bioavailable delivery of lipophilic ingredients in innovative dosage forms, including:

- Oral liquids and drops
- Functional beverages
- Gummies
- Oral gels
- Water-based nutritional products
- Multi-active formulations

Applications include omega-3 fatty acids, CoQ10, lutein, and other fat-soluble nutrients where enhanced absorption is desired.

The future of nutraceutical delivery systems

Technologies such as **CPO®, PlexoZome®, LipiSperse® and AquaCelle®** demonstrate how formulation science is evolving beyond ingredient selection alone. Whether converting oils into stable powders, encapsulating nutrients within genuine liposomes, or transforming lipophilic actives into highly dispersible particles, these innovations address one of the industry's most persistent challenges: ensuring that bioactive compounds reach the body in a form that can be effectively absorbed and utilized.

As the nutraceutical market continues to demand evidence-based products with measurable outcomes, advanced delivery technologies are expected to play an increasingly central role in the development of next-generation supplements and functional foods.

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Delivery Format Engineering Determines Bioavailability More Than Active Dosage in Hydration Formulas

Health and nutrition supplements have been evolving, with hydration formulas taking center stage across the industry. For product developers and manufacturers, the main goal is to ensure that substances such as vitamins or electrolytes can enter the bloodstream. Doing so means the body is ready to use them for their intended purpose.

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Traditionally, many professionals turned to the formula's active ingredients. The higher the active dosage, the more hydrating a product formula is meant to be. However, its effectiveness may depend more on the engineering of delivery formats.

Delivery formats vs. active dosage

Formula packaging and presentation have been critical factors in product formulation, though often considered only for convenience due to consumer priorities. However, a renewed focus on packaging has had a significant impact on market trends. In 2024, powdered mixes grew by 20% in sales, bringing the industry to $1.5 billion[1].

Active dosage was once considered more important for effectiveness. However, delivery format engineering has begun to veer away from simply being a carrier of the active ingredients within a product. Manufacturing companies now realize that the delivery format actually affects how well the body absorbs and utilizes the ingredients.

Active dosage can be less reliable, given that formulations may have limited bioavailability. After all, that dosage would have to undergo various bodily processes, such as digestion and metabolism, before the body can even use it.

Delivery format can improve how a product's formula is absorbed and transported through the bloodstream. It can even help regulate the release of active ingredients, ensuring maximum effectiveness.

How Is Bioavailability Determined?

Bioavailability is mainly determined by the body's exposure and reaction to the drug. While every person's body is different, the configuration of the drug and its regular absorption rate can typically be narrowed down. For instance, intravenous (IV) doses provide absolute bioavailability because they ensure direct delivery into the bloodstream. Given that absorption is critical to reaping the benefits of a formula, it's important to maximize bioavailability.

Delivery format engineering has proven effective across a variety of supplement categories. For example, standard curcumin has lower bioavailability despite its anti-inflammatory and antioxidant properties. Longvida's solid lipid curcumin particles increase bioavailability 285-fold compared to standard curcumin powder[2].

The same has been seen in hydration formulas. For example, West Bengal Chemical Industries Limited found that liposomal encapsulation can deliver 100 times better performance at lower doses than non-liposomal formulations. It also promotes the sustained release of those active agents, resulting in continuous nourishment[3].

Innovative delivery technologies

Delivery format engineering has developed numerous technologies to help pharmaceuticals remain stable.

Hydrogel technology

Hydrogel is a relatively rigid network of polymer chains that softens in water. Companies can customize delivery formats to swell at different rates, taking into account physiological factors such as temperature and pH levels. As a result, hydrogel technology can provide a controlled and sustained release of drugs into the body[4].

Micellar technologies

Micellar technology is a detailed microencapsulation method for lipid-soluble ingredients, often associated with hydration formulas and liposomal applications. It aims to mimic how the body naturally absorbs fat through the intestinal walls. As a result, the body experiences increased nutrient absorption[5].

Next-generation capsules

Next-generation capsules, also referred to as capsule-in-capsule technology, primarily focus on protecting active ingredients that have low bioavailability in the body. For example, probiotics can have limited benefits for gut health if a consumer's stomach acidity is too high. This delivery format has the potential to overcome challenges related to drug stability and scalability[6].

Water-free formats

A water-free or direct-to-mouth delivery format is effective for improving consumer adherence and eliminating the need for water. Many non-pill formats, such as chewables and granules, are becoming staples in the industry. That said, further innovations can improve the user experience. For instance, microencapsulation can help cover up bitter tastes without resorting to artificial flavoring.

Key considerations for delivery format engineering

Delivery format engineering requires more time and thought to procure the most effective technologies suitable for hydration formulas.

User xperience

Product manufacturers should keep user experience top of mind. Hydration formulas already improve physical performance and soothe nerves. That said, these delivery formats offer additional benefits in terms of convenience and absorption.

Delivery system mechanisms

There are numerous scientific principles underlying each delivery format and its impact on bioavailability. For instance, hydrogels and micelles each have a unique relative bioavailability even without the initial customization that comes with product development. Understanding these mechanisms can help differentiate the efficacy of each one.

Comparative effectiveness

Absorption mechanisms are only one aspect to consider when running data-driven comparisons of these delivery formats. Factors like absorption rates and clinical outcomes for these nutrients and supplements should also be studied. Even consumer behavior and preferences should be taken into consideration.

Formulation challenges

These refined delivery systems can improve bioavailability and reduce environmental impact, but there are initial sustainability challenges with formulation[7]. Some may also come across other hindrances like instability, insolubility and compatibility with active ingredients. It's critical to address these issues before mass production.

Regulatory considerations

Regulations governing novel delivery formats, especially in international markets, should be reviewed, as they could impact product development and marketing. For instance, the European Medicines Agency is responsible for reviewing any changes in physico-chemical properties that would affect bioavailability in existing products[8].

Invest in true bioavailability

Bioavailability is a key indicator of a product's effectiveness, and delivery format engineering has proven to be a more influential factor than companies may have initially thought. While active dosage in hydration formulas remains integral, it's critical to invest more resources in the delivery format of product development.

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From Wool To Peptides: The Science Behind Clinically Validated Keratin

Keratin is a key structural protein in hair, skin, and nails, but in its natural form it is poorly absorbed by the body. Advances in hydrolyzed keratin technology have enabled the production of bioavailable keratin peptides that can be effectively utilized to support keratin-rich tissues. Clinical studies have shown benefits for hair strength, skin appearance, and nail health, highlighting the growing role of keratin peptides in evidence-based nutricosmetic formulations.

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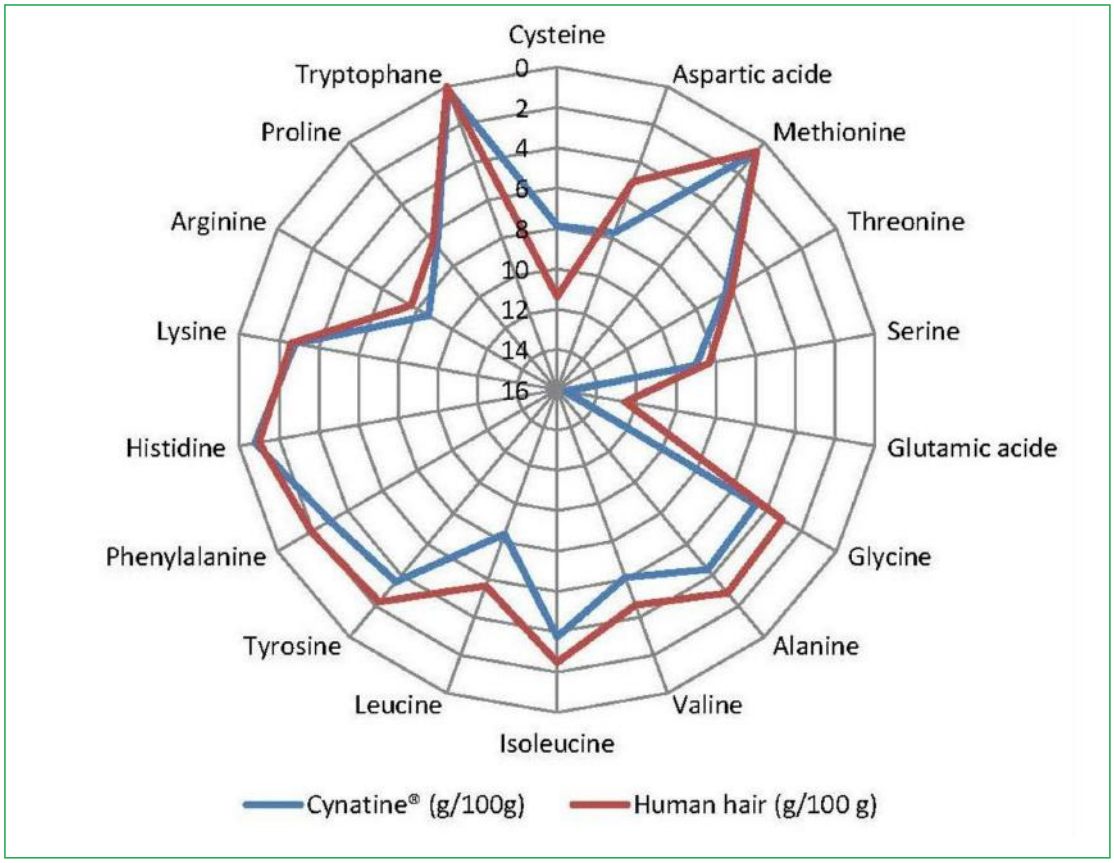
Keratin is a structural fibrous protein and a major component of hair, skin and nails. Its biological function is closely related to its high cysteine content, which enables the formation of disulfide bonds responsible for the mechanical strength, elasticity and resistance of keratinized tissues.

In its native form, keratin is insoluble and poorly bioavailable. This intrinsic property has historically limited its use in oral supplementation, despite its central role in human tissue structure. In this context, the key challenge is the keratin transformation into bioavailable form that can be absorbed, distributed and biologically utilized.

Within nutricosmetics, this has led to the development of hydrolyzed keratin peptides that deliver bioavailable amino acids to support keratin formation and the maintenance of keratin-rich tissues. Among these approaches, sheep wool has been successfully valorized as a source of keratin, giving new purpose to a traditionally underutilized agricultural by-product. Through controlled hydrolysis processes, this natural raw material is converted into bioavailable keratin peptides for nutricosmetic applications. Its compositional proximity to human keratin and high content of sulfur-containing amino acids make it a particularly relevant source.

The science behind bioactive keratin: a controlled technological approach

Wool represents a well-suited raw material for keratin extraction due to its structural similarity to human keratin and its richness in sulfur amino acids, particularly cysteine. However, the biological relevance of keratin depends entirely on its conversion into a stable and bioavailable peptides.



To ensure consistency, safety and functional integrity, the entire production chain is governed by a strict specification framework. Wool is sourced from controlled New Zealand sheep breeds for our white keratin and French for our pigmented keratin, where animal welfare standards are strictly enforced, including the ban of mulesing. Beyond ethical considerations, raw material handling is tightly controlled from shearing to processing to ensure optimal quality and traceability.

This upstream control is reinforced by an extensive safety assessment strategy. Each batch undergoes multi-residue analysis covering more than 400 targeted substances, as part of a structured risk management approach designed to ensure high levels of chemical and microbiological safety. This rigorous framework ensures a highly standardized raw material suitable for nutritional applications.

Keratin transformation is then achieved through a patented low-temperature, low-pressure hydrolysis process developed by Kerat'Innov, in a manufacturing facility located in France, operating under ISO 9001 and ISO 22000 certified quality and food safety management systems.

This proprietary process is specifically designed to preserve molecular integrity by avoiding protein denaturation. Above 100°C, proteins begin to undergo structural modifications and loss of biological function, while higher temperatures may lead to degradation and formation of unwanted by-products. Maintaining controlled processing conditions is therefore essential to preserve quality.

Under these mild conditions, the native amino acid profile is preserved, particularly cysteine and cystine, which are essential to keratin structure through disulfide bonding. Controlled hydrolysis then breaks down protein chains into low molecular weight peptides ranging from 400 to 700 Daltons, a range compatible with solubility and intestinal absorption.

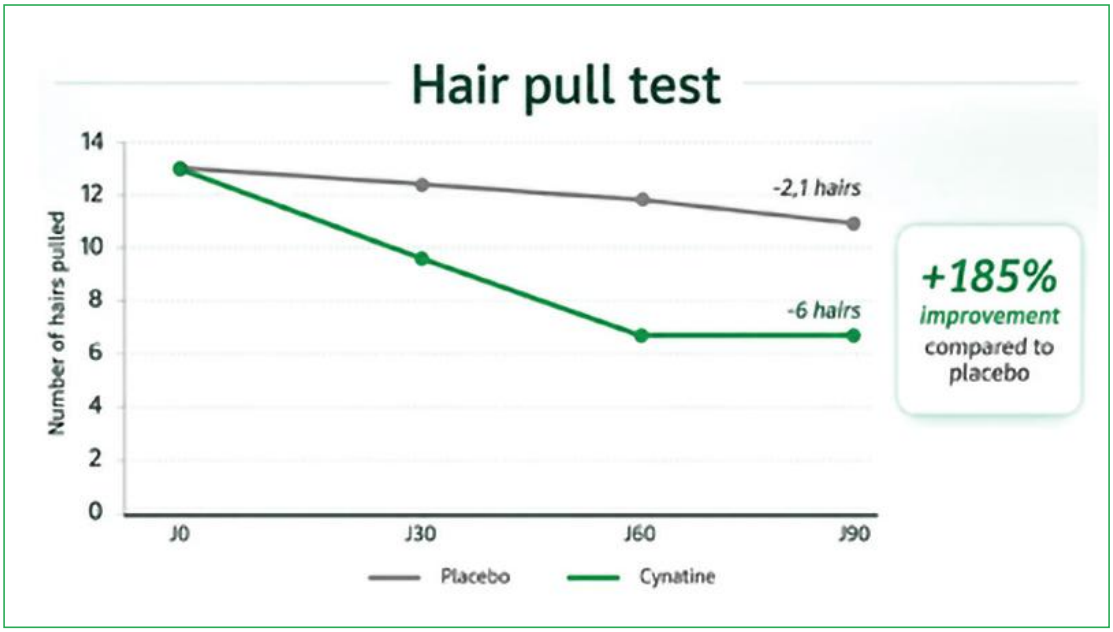
The final outcome is a standardized bioactive keratin peptides, produced under tightly controlled conditions, ensuring reproducibility, safety and biological relevance for nutricosmetic applications.

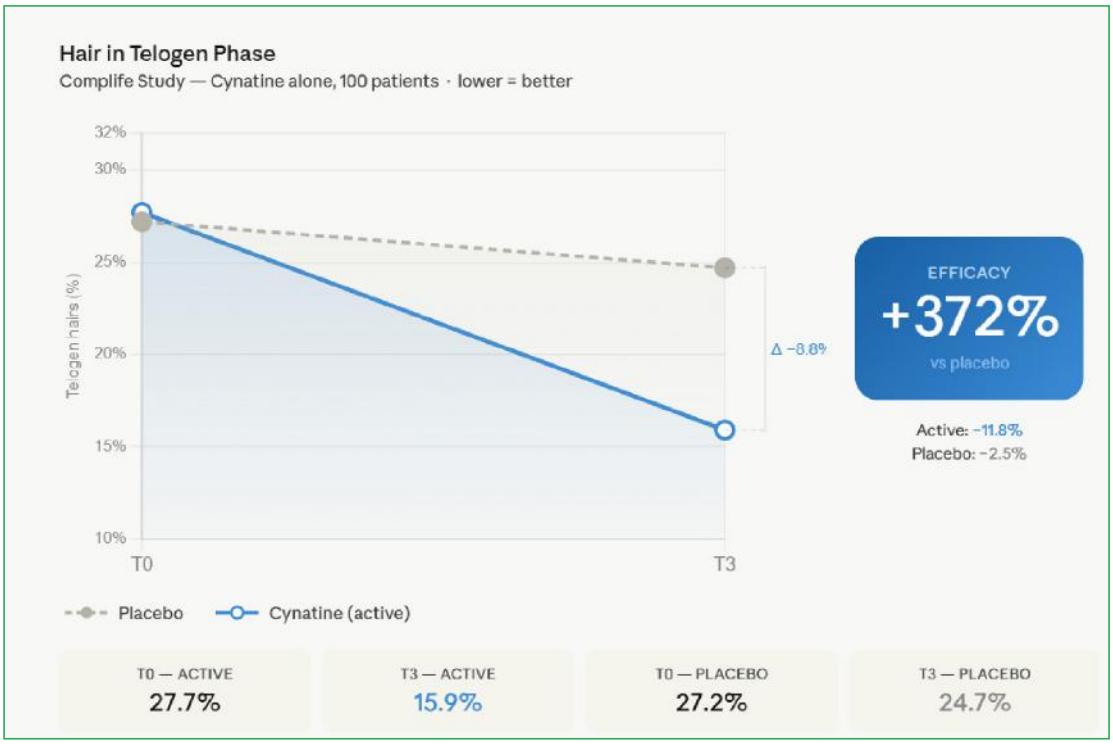
Cynatine® HNS: supporting hair, skin and nails structure

Cynatine® HNS illustrates how a controlled keratin peptide system can translate into clinically measurable outcomes. It provides a balanced amino acid profile with a high proportion of cysteine, delivered in a stabilized peptide form that is essential for biological activity. Once absorbed, these low molecular weight peptides support keratin synthesis pathways and contribute to structural maintenance of keratinized tissues.

The efficacy of Cynatine® HNS has been evaluated in multiple randomized, double-blind, placebo-controlled human clinical studies. At a daily dose of 500 mg, consistent improvements have been observed across key parameters related to hair, skin and nails.

- Reduces hair loss
- Improves hair growth dynamics, with a +12% increase in the anagen phase and a -12% decrease in the telogen phase
- Increases hair fiber strength and resistance to breakage
- Improves nail growth and hardness, while reducing the tendency to break
- Enhances skin hydration, elasticity and overall appearance, including an -11% reduction in wrinkles and improved skin smoothness in 60% of users





These results highlight the importance of delivering bioavailable keratin-derived peptides rather than native insoluble proteins, in order to effectively support physiological mechanisms involved in tissue renewal and resilience.

Extending beyond structure: targeting pigmentation pathways

In addition to its well-known benefits for hair, skin, and nails, pigmented keratin is also available to support both hair and skin pigmentation. Hair graying and skin tone changes are associated with biological processes involving melanocyte activity and melanin synthesis, which progressively decline with ageing and oxidative stress.

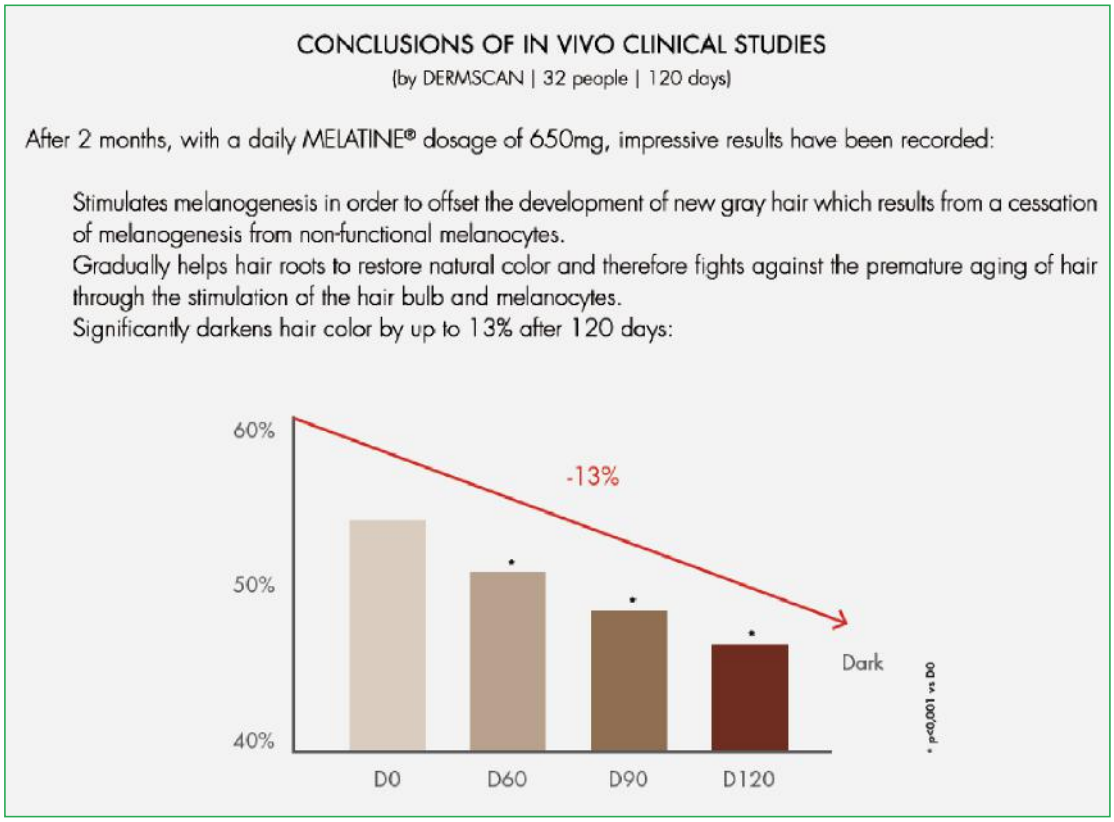
Within this biological framework, black wool-derived bioactive peptides also offer opportunities to target pigmentation-related pathways.

Melatine®: supporting hair pigmentation

Melatine® is designed to support the biological processes involved in hair pigmentation, with a specific focus on melanogenesis within the hair follicle.

By acting on melanin production pathways, it helps maintain natural hair color and supports the management of early signs of graying. Its activity is directed at upstream biological regulation rather than the hair fiber itself, addressing pigmentation at the follicular level.

Its relevance has been confirmed through clinical evaluation, positioning Melatine® as a complementary approach to structural keratin supplementation.



While most hair actives primarily target fiber strength and quality, Melatine® introduces a functional dimension focused on color maintenance.

Melaline®: supporting skin pigmentation and tone uniformity

Melaline® applies the same biological rationale to skin physiology, focusing on pigmentation pathways involved in complexion uniformity and tone balance.

It supports melanocyte activity and melanin production, contributing to improved skin tone homogeneity. In addition, it supports the skin's natural response to environmental stressors, including UV exposure, which are known to influence pigmentation processes.

Clinical and mechanistic data support its role in addressing pigmentation-related concerns within a broader nutricosmetic framework, where skin appearance is considered a dynamic outcome of multiple biological pathways.

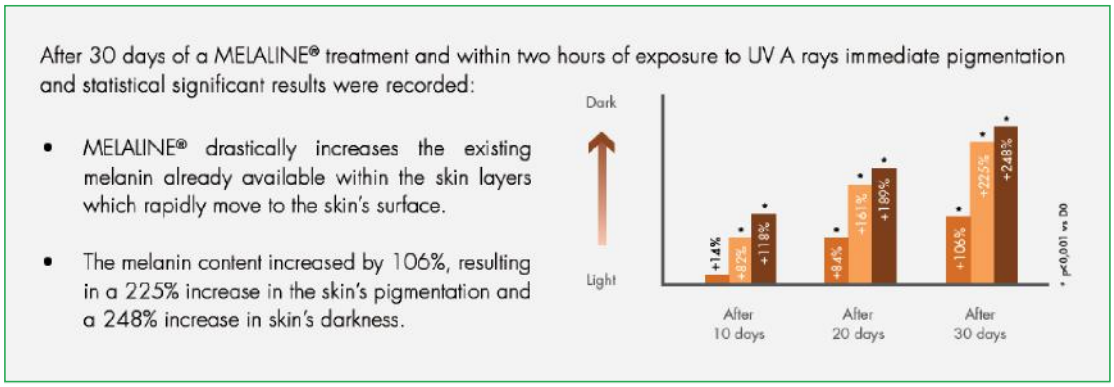
Conclusion

The transformation of wool into bioactive keratin peptides illustrates a structured and science-based approach to nutricosmetics. By preserving amino acid integrity and ensuring peptide bioavailability, this technology enables targeted support of both structural and functional dimensions of beauty.

Cynatine® HNS addresses the fundamental integrity of hair, skin and nails through bioavailable keratin peptides, while Melatine® and Melaline® extend this platform to pigmentation pathways, targeting the biological mechanisms underlying hair color and skin tone maintenance.

Building on the science behind keratin and its applications, LC Ingredients operates as a premium ingredient distributor for the food supplement and cosmetics industries. The company follows a science-driven approach, with a strong focus on clinically supported ingredients and evidence-based innovation, bridging raw material science with application-oriented product development.

This integrated approach reflects a broader industry shift toward more precise, clinically validated and multi-target solutions in the development of next-generation nutricosmetic products.



Vitafoods Asia 2026: 50% Expansion Across Asia-Pacific

Longevity takes centre stage at this year's show, with Vitafoods Asia 2026 evolving to feature new areas and a growing exhibitor base.

Vitafoods Asia is set to return to Bangkok's Queen Sirikit National Convention Center (QSNCC) from 2-4 September 2026, with an expanded show floor and an increased number of exhibitors in response to growing demand across Asia-Pacific for healthier ageing, greater well-being and more personalised approaches to nutrition. The show will also spotlight growth areas in nutraceutical innovation, reflecting the expanding role of nutrition across new applications.

As the leading meeting point for the global nutraceutical industry in Asia, this year's edition of Vitafoods Asia will welcome more than 800 exhibitors across 30,000 sqm of exhibition space - representing a **50% increase in floor space**. The expansion will bring together a wider range of exhibitors to support key areas of industry growth. This features new and expanded areas for **Packaging & Technology** and **Pet Nutrition** - an area which is forecasted to grow at a CAGR of 8% from 2024 to 2030 in APAC alone, as consumers increasingly seek preventative and functional health solutions for companion animals.

Nutrition for life and longevity

Vitafoods Asia 2026 will reflect the evolving nutrition landscape across Asia-Pacific, where an ageing population is driving greater focus on preventative health and long-term well-being. By 2050, around one in four people in the region will be aged 60 or over.

A key theme for this year's event will be **'Nutrition for Life & Longevity'** - spotlighting how science and technology are transforming nutrition to help people live longer, and better. The show will reflect this shift, with content across key areas of innovation in response to evolving consumer priorities. This includes the **Healthy Ageing Summit**, which will draw on the expertise of scientists and innovators to explore how nutrition and science are reshaping the way we age.

The wider content programme is designed to spotlight industry-leading research, bringing leaders together to explore the future of nutraceuticals in the Asia-Pacific region through comprehensive market analysis and forward-looking insights to 2033. Key themes span the healthspan revolution, microbiome health, and breakthrough technologies such as plant-derived exosome-like nanoparticles for regenerative medicine, alongside trending beauty-from-within categories like hair and skin health. The conference also addresses critical industry developments surrounding artificial intelligence (AI) implementation, including building brand trust in the AI era and the transformative role it can play in product development.

Attendees can see these trends brought to life across the show floor through returning dedicated zones and features, including the **New Products Zone, Tasting Bar** and guided **Innovation Tours**, which will showcase how leading ingredient suppliers are responding to evolving market trends and industry challenges. Alongside this, attendees will have opportunities to share knowledge and harness connections at key networking events, including the **Women in Nutraceuticals reception** and **Networking Night**. Finally, the **Vitafoods Asia Nutraceutical Awards** will return to recognise the most innovative products in dietary supplements, functional foods & beverages and extracts.

Connecting global innovators with regional opportunities

With the Asia-Pacific nutraceutical market anticipated to be worth USD 251.44 billion by 2034, the region is poised for continued growth - and Vitafoods Asia provides the ideal meeting place for international brands seeking to expand their presence.

Speaking on this year's event, **Rose Chitanuwat, Regional Portfolio Director, Informa Markets**, said: "As consumers in Asia - and globally - look beyond lifespan towards healthspan, brands are seeking new ways to tailor wellness to a wider variety of needs. Vitafoods Asia will reflect the pace at which demand for innovative nutrition solutions is accelerating across Asia-Pacific. This year's expanded edition will welcome even more exhibitors from across the nutraceutical supply chain, creating greater opportunities to explore emerging areas of growth. As Asia's nutraceutical hub, we're strengthening our role as a bridge between global nutraceutical innovation and the opportunities in the fast-growing Asia-Pacific region - helping brands around the world enter and grow in this dynamic market."

Registration for Vitafoods Asia 2026 is now open.
Sign up today: https://bit.ly/3PBja1U
For more information: www.vitafoodsasia.com.

Vitafoods™ Asia

B2B Nutramedic &Cosmetics **MEDIA PARTNER**

Vitafoods™ Asia

Registration is open!

Asia's nutraceutical hub

2-4 September 2026
QSNCC, Bangkok

Register now

EU Regulation 2026/909: New Restrictions on Citral and Benzyl Salicylate – What Cosmetic Manufacturers Need to Know

Regulation (EU) 2026/909 introduces a new compliance dimension for cosmetic manufacturers by moving beyond allergen labelling and imposing concentration limits on specific fragrance allergens. Companies must now ensure that products are not only correctly labelled but also comply with substance-specific restrictions, regardless of whether these allergens originate from fragrances, essential oils or botanical extracts.

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Introduction

The European Commission adopted Commission Regulation (EU) 2026/909 on 27 April 2026, amending Annexes II, III, V and VI of Regulation (EC) No 1223/2009 on cosmetic products.

While many cosmetic manufacturers are still adapting to the extensive fragrance allergen labelling requirements introduced by Regulation (EU) 2023/1545, Regulation (EU) 2026/909 introduces an additional challenge: certain fragrance allergens are no longer subject only to labelling requirements but also to concentration restrictions in finished cosmetic products.

For many companies, this means that a product may be correctly labelled yet still fail to comply with the new regulatory limits.

Why were these restrictions introduced?

The amendments are based on scientific opinions issued by the Scientific Committee on Consumer Safety (SCCS).

Citral

Citral has long been recognised as a skin sensitiser capable of inducing allergic contact dermatitis in susceptible individuals.

Following SCCS evaluations, the European Commission introduced new restrictions intended to reduce consumer exposure while maintaining the possibility of continued use in cosmetic products under defined conditions.

Benzyl salicylate

Benzyl salicylate has been evaluated for potential endocrine-disrupting properties.

Although its use has not been prohibited, the SCCS concluded that additional restrictions were necessary to ensure consumer safety, resulting in concentration limits that vary according to product category.

Maximum concentrations for citral (citral + geranial + neral)

For regulatory purposes, citral, geranial and neral are assessed as a single group and their combined concentration in the finished cosmetic product must comply with the applicable limits.

Product category	Maximum concentration (%)
Lip make-up products, lipstick, lip salves	0.11
Fragrance products (hydroalcoholic and non-hydroalcoholic, spray and non-spray)	0.6
Deodorants and antiperspirants	0.032
Eye products, face make-up and make-up remover	0.65
Leave-on skin and nail products	0.15
Oral products	0.35
Hair leave-on products	1.2
Skin and hair rinse-off products	1.2
Baby wipes, intimate wipes and anogenital leave-on products	0.063

Which substances are affected?

The new restrictions primarily concern:

- Citral
- Geranial
- Neral
- Benzyl salicylate

A particularly important aspect of the Regulation is that citral, geranial and neral are assessed together from a regulatory perspective.

Manufacturers must therefore consider the combined concentration originating from all ingredients present in the formulation, including fragrance compounds, essential oils and botanical extracts.

Fragrance allergen aeclaration thresholds

In addition to the concentration restrictions introduced by Regulation (EU) 2026/909, manufacturers must continue to comply with fragrance allergen declaration requirements.

A fragrance allergen must be declared in the ingredient list when its concentration in the finished cosmetic product exceeds:

- 0.001% in leave-on products
- 0.01% in rinse-off products

These declaration thresholds remain independent from the concentration limits established by Regulation (EU) 2026/909.

A product may therefore:

- require allergen declaration while remaining compliant with the new restrictions,
- comply with allergen declaration requirements while exceeding the newly established concentration limits.

Both requirements must be assessed separately.

Labelling requirements vs. use restrictions

One of the most common misunderstandings is the assumption that compliance with allergen labelling automatically guarantees regulatory compliance.

Maximum concentrations for benzyl salicylate

Product category	Maximum concentration (%)
Fragrance products (hydroalcoholic and non-hydroalcoholic, spray and non-spray)	4.0
Shower gels and bath products	1.3
Body lotion	0.7
Leave-on skin and hair products (non-spray/non-aerosol)	0.5
Hair spray and aerosol products	0.5
Skin and hair rinse-off products (except shower gel/bath products)	0.5
Face make-up and make-up remover products	0.2
Deodorant products (spray/aerosol)	0.91
Oral products	0.004

It should be noted that these limits apply to the total concentration present in the finished cosmetic product, regardless of whether the substance originates from a fragrance composition, essential oil, botanical extract or another ingredient source.

This is no longer the case. Manufacturers must now distinguish between:

Fragrance allergen labelling
The requirement to declare allergens in the ingredient list once established thresholds are exceeded.

Concentration restrictions
The requirement to ensure that specific substances remain below maximum permitted concentrations for the relevant product category.

A cosmetic product may therefore:
- comply with allergen labelling rules,
- yet exceed the concentration limits established under Regulation (EU) 2026/909.

Product categories matter

The new restrictions are category-dependent.

For example, the maximum permitted concentration may differ significantly between:
- perfumes,
- deodorants,
- oral care products,
- leave-on skin products,
- rinse-off products,
- eye-area products,
- hair products.

Consequently, manufacturers must evaluate each formulation according to its intended use and corresponding regulatory category.

Selecting an incorrect category may lead to an inaccurate compliance assessment.

Why essential oils require particular attention

Many manufacturers associate citral only with synthetic fragrance compounds.

In reality, citral, geranial and neral are frequently present in natural raw materials, including:
- Lemongrass oil,
- Litsea cubeba oil,
- Lemon oil,
- Lime oil,
- other citrus-derived essential oils.

As a result, even products marketed as natural or essential-oil-based may be affected by the new restrictions.

Manufacturers should carefully review supplier documentation, especially Cosmetic Allergen Lists and IFRA certificates.

Compliance deadlines

Regulation (EU) 2026/909 includes transitional periods that allow manufacturers time to adapt existing formulations and product documentation.

Two separate deadlines apply:

1 January 2027
From this date onwards, cosmetic products that do not comply with the new restrictions may no longer be placed on the European Union market for the first time.

In practical terms, any new product launched after this date must already comply with the concentration limits introduced by Regulation (EU) 2026/909.

1 July 2028
From this date onwards, non-compliant products may no longer be made available on the European Union market.

This requirement also applies to products that were already on the market before the Regulation entered into force. Consequently, existing stock and products already circulating through the distribution chain must also comply by the end of the transitional period.

Manufacturers should therefore review both new and existing formulations well in advance of these deadlines to avoid reformulation delays, product withdrawals or supply interruptions.

What should manufacturers do next?

A practical compliance review should include:
1. Identification of citral, geranial, neral and benzyl salicylate in all formulations.
2. Verification of concentrations using supplier documentation.
3. Calculation of the total concentration present in the finished product.
4. Comparison with the limits applicable to the relevant product category.
5. Assessment of whether reformulation is required.

Where limits are exceeded, the most common corrective action is reducing the concentration of the fragrance composition or other scented ingredients contributing to the restricted substance.

Conclusion

Regulation (EU) 2026/909 represents a significant shift from simple allergen labelling toward active management of fragrance allergen exposure in cosmetic products.

For manufacturers, compliance now requires more than reviewing ingredient lists. It demands a detailed understanding of ingredient composition, supplier documentation and cumulative exposure from multiple raw materials.

Early assessment of existing formulations will help companies avoid last-minute reformulations, regulatory risks and market disruption as the compliance deadlines approach.

Manufacturers who have not yet reviewed their products for citral, geranial, neral and benzyl salicylate should consider doing so as soon as possible.

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Dual-Strain Probi Probiotic Improves Occasional Constipation in Healthy Adults

Probi, part of the Symrise Group, has announced new clinical evidence demonstrating that its new dual-strain probiotic formulation consisting of the proprietary strain LP299V® and LpGOS42TM delivers statistically significant improvements in bowel regularity, stool consistency and digestive comfort.

The randomized, placebo-controlled study evaluated a combination of *Lactiplantibacillus plantarum* 299v (LP299V) and *Lactiplantibacillus plantarum* GOS42 (LpGOS42), two patent-protected strains developed by Probi.

While LP299V is already well documented for its benefits in individuals with irritable bowel syndrome, this is the first clinical trial to investigate the complementary effects of combining LP299V with LpGOS42 in otherwise healthy adults experiencing occasional constipation.

The 8-week study, conducted in London, Canada, included 100 healthy adults reporting occasional constipation. Participants receiving the new dual-strain formulation experienced statistically significant improvement compared to placebo.

- Improved stool consistency
- A higher percentage of complete spontaneous bowel movements (CSBMs) without hard or lumpy stools
- Reduced flatulence
- Improved quality of life, particularly in satisfaction-related domains

A focused post hoc analysis provided further insight. Among participants reporting three or fewer weekly bowel movements at baseline, which represents 80% of the study population, those receiving the dual-strain combination achieved a significantly greater increase in weekly CSBMs compared to placebo.

The study concludes that daily supplementation with LP299V and LpGOS42 over eight weeks leads to measurable, statistically significant improvements in bowel function, digestive comfort, and satisfaction with bowel movement regularity in healthy adults with occasional constipation.

"Constipation affects an estimated 12% of the global population and can significantly impair daily comfort and overall well-being," says Christina Vegge, VP Research & Development at Probi. "This study demonstrates that a combination of carefully selected probiotic strains can deliver clinically meaningful improvements in bowel regularity and digestive comfort in healthy individuals, offering a science-based, non-pharmaceutical solution for occasional constipation."

With this new data, Probi further strengthens its clinically substantiated health platform and reinforces its strategy of developing targeted, strain-specific probiotic solutions backed by human clinical research. The new dual-strain formulation is available for global B2B partnerships across dietary supplements and functional nutrition applications.

By combining documented strains with complementary mechanisms of action, Probi continues to advance probiotic innovation designed to address defined consumer health needs with robust scientific validation.

For more info: LP299V® probiotic strain with unique health benefit - Probi

INSPIRATIONAL SUCCESS STORY

Centre for the Gut Microbiome – CCM

Leading the way in microbiome research and personalized health by translating cutting-edge science into everyday clinical practice.

As scientific understanding of the gut microbiome continues to expand, its role in human health is becoming increasingly impossible to ignore. What was once considered a niche area of research is now emerging as one of the most promising frontiers in preventive and personalized healthcare.

In this edition of *Inspirational Success Story*, we speak with the team behind the Centre for Gut Microbiome (CCM), a pioneering institution that recognized the potential of microbiome science long before it entered mainstream healthcare discussions. As the first center in this part of Europe dedicated exclusively to gut microbiome analysis and research, CCM has built a unique multidisciplinary model that combines cutting-edge diagnostics, scientific expertise, and personalized patient care.

From a bold idea driven by curiosity and scientific conviction to a trusted center helping individuals better understand the complex ecosystem within, CCM's journey demonstrates how vision, perseverance, and a commitment to evidence-based practice can transform an emerging scientific field into a meaningful healthcare service. In this interview, the CCM team shares the story behind their success, the challenges they faced, and their ambitions for the future of microbiome medicine.

How did it all begin, what inspired you, and what was the initial idea?

CCM was born from a simple but stubborn conviction: that the trillions of microorganisms living inside us deserves to be treated as seriously as any other organ system. At a time when this ecosystem was, and largely still is, underexplored, we decided not to wait for the science to become mainstream. We became the first institution in this part of Eu-

rope dedicated exclusively to gut microbiome analysis and research. The inspiration was twofold: a fascination with how much our inner microscopic world reveals about our health, and frustration that patients had nowhere to turn for a serious, science-grounded approach to it. So we built that place ourselves.

What was needed from idea to realization?

It took building something that did not exist yet. That meant partnering with a specialized laboratory abroad to run high-resolution analysis, designing a sampling process patients could complete calmly at home, and most importantly, assembling a genuinely multidisciplinary team. We were clear from the start that the microbiome cannot be understood by one profession alone, so we brought together medicine, nutrition, psychology, biotechnology, biochemistry and kinesiology under one roof. It also required patience and discipline: choosing to do one thing well rather than dabbling in everything.

What products do you offer today, and where and how do you market them?

Today our core offering is a detailed gut microbiome analysis from a stool sample that identifies a very broad range of known gut bacteria, combined with expert interpretation and personalized recommendations. Crucially, we do not just sell a test, we support patients throughout the entire process until their microbiome is restored. We also provide guided consultations, available both in person and online, with a dedicated microbiome therapist. Beyond clinical work, we run our own research, including studies on targeted interventions. We reach people primarily through education, our social channels, public lectures, partnerships, and a brand voice that makes the microbiome accessible without dumbing down the science.

Are you satisfied with what you've achieved?

We are proud, but "satisfied" would not be the right word for a field that is still being explored and in need of better understanding. We have established something that did not exist here before and earned the trust of patients who now understand their health from a new perspective. That is meaningful, but the microbiome continues to show how much there is still to understand, which keeps us curious and constantly learning rather than settled.

What are you most proud of?

The continuity of care. Anyone can sell a result. What we are proudest of is staying with patients through the whole journey, and doing it with a team that respects every discipline at the table. We are also proud to have shown that serious, specialized microbiome science can live in Croatia and not only in larger research centers abroad.

Is there anything else you would like to add... wishes, plans...?

Our aim is for the gut microbiome to be regarded as an equally important part of prevention and treatment as any other system in the body, and we remain committed to advancing the research that will help make that a reality. As we often say: listen to your gut.

A few answers that might resonate especially with the colleagues working there

Paola Pavačić MSc in Microbiome in Health and Disease

What drew Paola to CCM is exactly what makes the place tick: a long-standing fascination with the microbiome that found a home here. Coming from one of the strongest microbiome programs in the world, she brings rigor to a field that too often gets reduced to wellness buzzwords. At CCM that academic depth isn't decoration, it's the standard. By transforming near-complete bacterial profiles into insights patients can act on, she brings her training into alignment with the company's mission, in a region where this kind of expertise is both rare and in constant demand.

Josipa Juričević, MSc in Nutrition

Josipa's path runs straight through CCM's philosophy. Her interest in the microbiome, combined with hands-on graduate work with probiotics, fits a center built on the belief that you cannot separate what we eat from the ecosystem inside us. What she values most is the multidisciplinary approach and that is not a slogan here, it is the operating model: nutrition sitting at the same table as medicine, psychology, and biotechnology. For someone who deliberately cultivates that cross-disciplinary mindset, it is less a job than a natural fit with how she already thinks about health.

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Botanical Ingredient for Male Hair Health

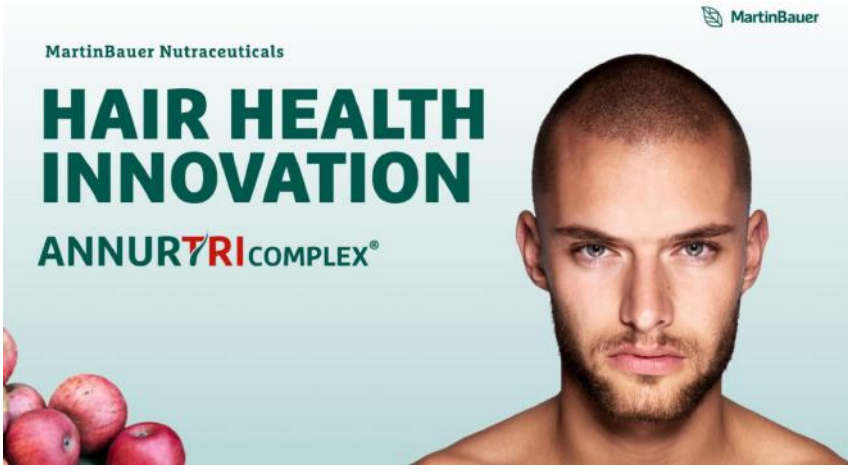
MartinBauer Nutraceuticals announces the launch of AnnurTriComplex®, a clinically validated branded ingredient designed to support hair strength and natural hair growth without side effects.

Hair thinning is increasingly recognised as a significant aesthetic concern with strong links to self perception and psychosocial wellbeing. Published epidemiological data indicate that ~30-50% of all women experience hair loss or thinning at some point in their lives. Androgenetic alopecia affects up to 50% of men by age 50, with approximately 30% of men in their twenties already exhibit visible thinning. An estimated 735,000 to 800,000 hair transplant procedures are performed globally, each year, highlighting a growing consumer demand for proactive, healthy and evidence based solutions.

For product developers, these trends underscore the need for scientifically substantiated, naturally derived ingredients that support healthy hair while maintaining systemic balance - suitable for both prevention and long term use.

Some current treatments are intended exclusively for men, as they reduce dihydrotestosterone (DHT) synthesis, while others promote vasodilation. Both approaches may also present tolerability and compliance issues for certain users or compromise sexual performance.

AnnurTriComplex® offers a botanical alternative focused on supporting follicular activity and hair growth. The ingredient is derived from Annurca apples (*Malus pumila*) cultivated exclusively in the Campania region of southern Italy, protected by "Melannurca Campana PGI" and standardised for oligomeric procyanidins and polyphenols. Pre-clinical and clinical research conducted at the University of Naples, Italy, has documented these apples for their impact on scalp and follicular health, including increased keratin expression and antioxidant protection.



Pre-clinical studies demonstrated that AnnurTriComplex® enhances the hair follicle and reprograms the mitochondria, leading to increased hair follicle activity and upregulation of keratin synthesis. This enables stronger, fuller looking hair and sustained growth over time. Complementary in vivo studies showed reduced hair loss and prolonged active hair growth phase (anagenphase).

The clinical trials support these findings: a randomised, double blind study demonstrated the superiority of Annurca apple compared with other apple varieties, and a subsequent trial involving 250 adults with hair loss issues showed that supplementation with 400 mg of AnnurTriComplex® twice daily significantly improved hair growth outcomes after 60 days.

"These findings support a positioning for healthy hair growth, strength, thickness and density," says Dr. Julia Wiebe of MartinBauer Nutraceuticals. "AnnurTriComplex® provides formulators with a clinically effective, natural, food derived ingredient that supports follicular health and growth rate helping streamline regulatory positioning while meeting consumer expectations for safety and scientific credibility."

AnnurTriComplex® features a pleasant natural apple taste, good solubility. Moreover, it is suitable for both, oral and topical applications, enabling brands to deliver comprehensive 360° hair health solutions.

Aligned with plant based and clean label formulation strategies, AnnurTriComplex® is produced through MartinBauer's proprietary process, which preserves the integrity of the natural apple matrix to ensure optimal bio-accessibility and bioavailability. Its multi targeted activity - including antioxidant support, bioactivation of hair follicles, and enhanced keratin expression - broadens development opportunities beyond mechanisms traditionally associated with topical vasodilators and without interfering with hormonal balance.

"With increasing consumer focus on appearance and healthy ageing, hair health has become an important area of interest in nutraceutical research,"' Dr. Julia Wiebe concludes. "AnnurTriComplex® offers a clinically substantiated solution with a clear mechanism of action, providing manufacturers with an opportunity to develop differentiated and effective hair health products."

For more information:
www.martin-bauer-nutraceuticals.com

EPAX Cetoleic 2040 Reduces LDL-Cholesterol in Overweight Adults

Supplementation with EPAX® Cetoleic 2040 reduced LDL-cholesterol in overweight and obese adults by 7% after eight weeks, a clinical study has found

Supplementation with EPAX® Cetoleic 2040, an Omega-9 Gondoic acid and Omega-11 Cetoleic acid oil, reduced LDL-cholesterol in overweight and obese adults by 7% after eight weeks, a clinical study has found. (Hansen K, Mjaatveit MA, Andreassen LV, Mjøs SA and Gudbrandsen OA. Supplementation with a cetoleic acid concentrate decreased the serum LDL-cholesterol concentration in healthy adults with overweight or obesity. A randomised double-blind controlled clinical trial. (British Journal of Nutrition, 2026 May 6:1-29. doi: 10.1017/S0007114526107375)

Raised total cholesterol, and LDL-cholesterol in particular, is associated with higher body fat percentage[1] and is a major risk factor for cardiovascular disease (CVD),[2] the world's leading cause of death.[3] Approximately 10% of adults have elevated total cholesterol levels.[4]

The new study is the first human study to evaluate the effects of the marine long-chain monounsaturated fatty acids (LC-MUFAs) cetoleic and gondoic acid on LDL-cholesterol. The study was conducted by Professor Gudbrandsen of the University of Bergen, Norway, and builds on considerable pre-clinical data from the Bergen group as well as others.

Eighty healthy, overweight and obese men and women (BMI>25) were enrolled, and 75 completed the eight-week intervention. They were randomised to a 4g daily dose of either EPAX Cetoleic 2040, a cetoleic acid concentrate, or a control containing soyabean oil and Omega-3 PUFAs from anchovy oil. Both interventions had comparable levels of Omega-3, enabling the researchers to distinguish the effects of cetoleic acid concentrate from those of Omega-3.

After eight weeks, there was a statistically significant 7% decrease in LDL-cholesterol from baseline in participants taking EPAX Cetoleic 2040 compared with the control group (p = 0.033). This reduction was not associated with any changes in body fat percentage. A 7% reduction in LDL-cholesterol achieved through dietary modification is estimated to reduce the risk of coronary heart disease by 15%.[5]

Regular consumption of marine fish and seafood is associated with reduced CVD risk, a relationship historically attributed to the Omega-3 polyunsaturated fatty acids (PUFAs) EPA and DHA. However, EPA and DHA have no cholesterol-lowering effects unless taken in very high doses.

Oddrun Anita Gudbrandsen, Professor at the University of Bergen, said: "We already have extensive preclinical evidence that demonstrate the benefit of long-chain monounsaturated fatty acids on cholesterol concentration. Our clinical trial in healthy adults with overweight or obesity showed that supplementation with cetoleic acid concentrate reduced the LDL-cholesterol by 7% which is estimated to reduce the risk of coronary heart disease by around 15%. By reducing LDL-cholesterol, Epax's Omega-11 cetoleic concentrates have the potential to make a significant impact on cardiovascular health."

Thomas Gulbrandsen, Global Sales and Marketing Director, Epax Norway AS, said: "The new study is testament to Epax's innovation strategy and underscores our commitment to clinically relevant, high-quality marine oils. It also supports oils in our EPAX® NovusLipid category of next-generation marine lipids, including EPAX® Omega 3-9-11 – the world's first commercially available LC-MUFA concentrate. Derived from pelagic fish from the North Atlantic, it offers a unique combination of Omegas 3, 9 and 11, supporting heart, metabolic, and skin health."

Reference:

1 Sun J et al. The correlation of total percent fat with alterations in cholesterol and triglycerides in adults. Frontiers in Nutrition, 2022;9:881729

2 Prospective Studies Collaboration. Blood cholesterol and vascular mortality by age, sex, and blood pressure: a meta-analysis of individual data from 61 prospective studies with 55,000 vascular deaths. Lancet, 2007;370:1829-1839

3 World Heart Report 2023: Confronting the World's Number One Killer. Geneva, Switzerland. World Heart Federation. 2023

4 CDC, High Cholesterol Facts, 2024

5 The Lipid Research Clinics Coronary Primary Prevention Trial results. II. The relationship of reduction in incidence of coronary heart disease to cholesterol lowering. JAMA, 1984;251:365-374

TriNutra® Receives U.S. Patent for ThymoQuin® and Astaxanthin Composition

Published research and a newly issued U.S. patent underscore the synergistic potential of ThymoQuin® and astaxanthin.

TriNutra, the supplier of ThymoQuin® premium USP black seed oil, has announced its recent U.S. patent for compositions comprising ThymoQuin and astaxanthin.

The patent protects compositions that combine TriNutra's standardized ThymoQuin with astaxanthin and other biologically active compounds. According to the patent, these combinations demonstrated synergistic biological activity, supporting enhanced efficacy compared to the individual ingredients alone.

Thymoquinone (TQ) and p-cymene are key bioactive components in *Nigella sativa* (black seed) oil and are unstable in the presence of oxidants, such as free fatty acids. This leads to reduced potency and diminished stability of black seed oil. It was therefore a major goal of TriNutra to develop technologies that standardize, stabilize, and maintain the natural balance of bioactive compounds within its premium USP black seed oil brands. The natural bioactives work synergistically among themselves, with additional synergistic enhancement when combined with other ingredients.

"Our unique formulation approach continues to demonstrate that the composition of black seed oil's bioactives matters significantly," said Morris Zelkha, CEO of TriNutra. "ThymoQuin has brought innovation to this ancient ingredient with several published clinical trials on its health benefits and composition-dependent efficacy, and numerous global patents back it for its composition, stability, bioavailability, and use. We are incredibly proud of yet another achievement for ThymoQuin and its potential in health and wellness."

ThymoQuin achieves its unique, specific composition balancing thymoquinone, p-cymene, and free fatty acids (FFAs) through its strict growing, harvesting, and proprietary cold-press manufacturing processes. Published clinical research demonstrated that ThymoQuin supports healthy cortisol levels, while also promoting a balanced, eubiotic gut microbiome, better mood and sleep, cardiometabolic support with healthy blood pressure control, a balanced inflammatory response, cellular energy production, and antioxidant protection.

Astaxanthin is known for its potential to support a healthy inflammatory response, cognitive function, cardiovascular health, mood states, and more. TriNutra's published research, which initiated this patent, demonstrated that the pairing had a synergistic effect, potentiating astaxanthins' inflammatory activity.

Zelkha continued, "ThymoQuin was specifically developed to preserve and optimize the key bioactives found in black seed oil, and our research found that pairing it with astaxanthin resulted in synergistic biological activity, particularly in supporting a balanced inflammatory response and antioxidant protection."

The patent award comes on the heels of TriNutra's continued advancement of quality standards and scientific substantiation for its premium USP black seed oil ingredients, including the publication of the clinical research demonstrating that ThymoQuin® significantly reduced cortisol levels while improving sleep quality and stress resilience in moderately stressed adults. As well as its published clinical research on ThymoQuin®-OCare for oral health, which demonstrated improvements in gingival function, plaque accumulation, oral microbiome diversity, and overall oral wellness.

These achievements further strengthen TriNutra's growing intellectual property portfolio, which includes patents covering standardized high-thymoquinone black seed oil compositions, enhanced stability, and bioavailability. ThymoQuin is available across dietary supplements, beauty (B'utyQuin), oral health (ThymoQuin-Ocare), and pet health. It is available in powder and oil formats, providing formulation flexibility across tablets, capsules, soft gels, functional foods, creams, lotions, serums, and more.

For more info: TriNutra.com or www.ThymoQuin.com.

WellVine™ May Reduce Formulation Tradeoffs in Functional Products

Peer-reviewed research identifies balanced taste profile, low bitterness, and smoother mouthfeel as key advantages for modern food and beverage development.

A newly published peer-reviewed sensory study is drawing attention from formulators and product developers seeking functional ingredients that perform effectively in finished products. The study, published in the Journal of Agricultural and Food Chemistry (https://pubs.acs.org/doi/10.1021/acs.jafc.5c15103), examined the taste chemistry of Chardonnay grape marc, the whole-fruit source material behind Sonomaceuticals WellVine™, to better understand the compounds responsible for taste, mouthfeel, and overall formulation behavior.

Chardonnay grape marc is a whole-fruit upcycled ingredient containing naturally occurring fiber, polyphenols, organic acids, and plant compounds retained within the original food matrix. This superfood is often used in dietary supplements, functional food, snacks, and beverages as a whole-fruit prebiotic fiber to support gut diversity. Researchers identified 39 taste-active compounds within the Whole-Fruit Chardonnay marc ingredient system. However, only a smaller subset significantly influenced the overall taste profile. The resulting profile was characterized by: mild natural sweetness; bright acidity; Smooth, velvety astringency; very low bitterness.

Low bitterness in functional formulation

Bitterness and harsh sensory characteristics remain among the biggest obstacles in functional product development. Many fiber systems, botanical extracts, and polyphenol-rich ingredients introduce off-notes, drying mouthfeel, harsh bitterness, flavor instability and increased masking requirements. These issues can increase development complexity, sweetener dependency, ingredient stacking, cost of goods and time-to-market timelines.

"In functional foods, taste is often the difference between first purchase and repeat purchase," said Scott Forsberg, CEO of WellVine™. "This study helps explain why Chardonnay marc behaves differently in formulation systems," Forsberg added. "The whole-fruit matrix appears to moderate harsh sensory characteristics in a way isolated ingredients often do not."

Whole-food matrix vs. isolated ingredient systems

One of the most significant findings from the study was that the sensory experience appeared to be driven less by individual compounds and more by how those compounds behaved together within the complete food matrix.

"Many functional ingredients require extensive correction systems once they enter finished products," said Forsberg. "This research suggests whole-fruit ingredient structures, such as WellVine, may offer a more integrated sensory experience from the start with functional health benefits." This distinction of whole-food versus isolated ingredient systems may have important implications for formulators working with polyphenol-rich systems, fiber-forward products, cocoa and chocolate applications, functional beverages, wellness powders and clean-label product platforms.

Potential advantages in product development

The findings suggest WellVine™ Chardonnay marc may help support:

- Improved sensory acceptance
- Reduced taste-masking requirements
- Greater formulation flexibility
- Cleaner label positioning
- Better alignment between functionality and consumer experience

The ingredient's balanced profile may also make it particularly relevant in systems where bitterness typically becomes limiting, including cocoa flavanol products, fiber beverages, and plant-based wellness formulations.

From sustainability story to functional utility

Beyond sensory performance, Chardonnay marc also aligns with growing industry interest in ingredient upcycling and sustainable sourcing. Derived from the skins, seeds, and solids remaining after Chardonnay grapes are pressed, the material contains naturally occurring fiber, polyphenols, organic acids, and plant nutrients. Rather than being discarded, these nutrient-rich materials can now be incorporated into modern formulation systems as functional whole-food ingredients.

For more information: https://wellvine.com/

Layn Natural Ingredients to Highlight Monk Fruit Decoction Solutions at IFT FIRST 2026

Layn Natural Ingredients, a global leader in polyphenol-rich botanical extract manufacturing and the world's largest producer and innovator of monk fruit and stevia sweeteners, will showcase its expanded portfolio of monk fruit sweetener solutions at IFT FIRST 2026, including its recently introduced monk fruit decoction powder and liquid, designed to provide food, beverage, flavor, and nutrition brands with additional formulation flexibility and broader global market opportunities.

Demand for monk fruit continues to grow as manufacturers look for more flexible ways to reduce sugar while meeting evolving formulation, labeling, and regulatory requirements. Layn's newly expanded monk fruit portfolio supports these diverse product-development needs, including taste profile, ingredient positioning, processing preferences, and market access. The monk fruit decoction powder and liquid add another option to this portfolio. Produced through a traditional non-selective water-based decoction process, these ingredients naturally provide approximately five to six times the sweetness of sugar while supporting fruit-derived and ultra-clean-label product positioning , further expanding one of the industry's most comprehensive portfolios of monk fruit ingredients.

Recent regulatory developments have further increased interest among global manufacturers in monk fruit decoction products. In 2024, the UK Food Standards Agency (FSA) concluded that non-selective aqueous decoctions of monk fruit are not considered novel foods under Regulation (EU) 2015/2283, citing evidence of significant consumption in the European Union and the United Kingdom prior to May 15, 1997. The determination supports the use of monk fruit decoctions as conventional food ingredients in applicable European markets.

"For brands developing products across multiple regions, ingredient flexibility and regulatory clarity are becoming increasingly critical considerations," said Doris Ip, Senior Marketing Manager of Layn Natural Ingredients. "What differentiates Layn is our vertically integrated monk fruit platform, which begins at the plant level with proprietary cultivar development, tissue culture propagation, and grower partnerships, and extends through cultivation, extraction, and ingredient manufacturing. This source-to-solution approach helps us deliver tailored sweetening solutions backed by supply stability, consistent quality, technical expertise, and decades of natural ingredient innovation."

The company currently offers monk fruit decoction powder and liquid standardized to 1-3% Mogroside V, further expanding one of the industry's most comprehensive portfolios of monk fruit ingredients.

In addition to its monk fruit decoction announcement, Layn will showcase its FDA GRAS (GRN 001203) and FEMA GRAS (No. 5106) status for SteviUp® M2. SteviUp® M2 is a next-generation Reb M2 sweetener developed to deliver a cleaner, more sugar-like taste profile with improved solubility and reduced lingering sweetness compared to conventional steviol glycosides.

Visitors at IFT FIRST 2026 are invited to stop by Layn's booth# 2203, where the company is hosting a tasting session of its no sugar-added, SteviUp® M2 Mango sorbet, a sugar-free electrolyte and hydration drink sweetened by its monk fruit decoction ingredients and infused with functional botanicals, as well as a sugar-free peach black tea sweetened with SteviUp® M2.

Leo Lin, Layn's R&D Manager, is also hosting a "Taste of Science Session" to discuss sweetener formulation challenges and opportunities and provide attendees with prototype beverages featuring Layn's monk fruit and stevia ingredients.

- Monday, July 13 - 1:30-1:45 pm CT
- Exhibit Hall A: Taste of Science Stage (pre-registration not required)

To learn more about the company's expanded natural sweetener portfolio, U.S.-made solutions, and its broader range of botanical ingredients for food, beverage, flavor, and nutraceutical applications, visit them at the IFT booth #2203 or visit www.LaynCorp.com.

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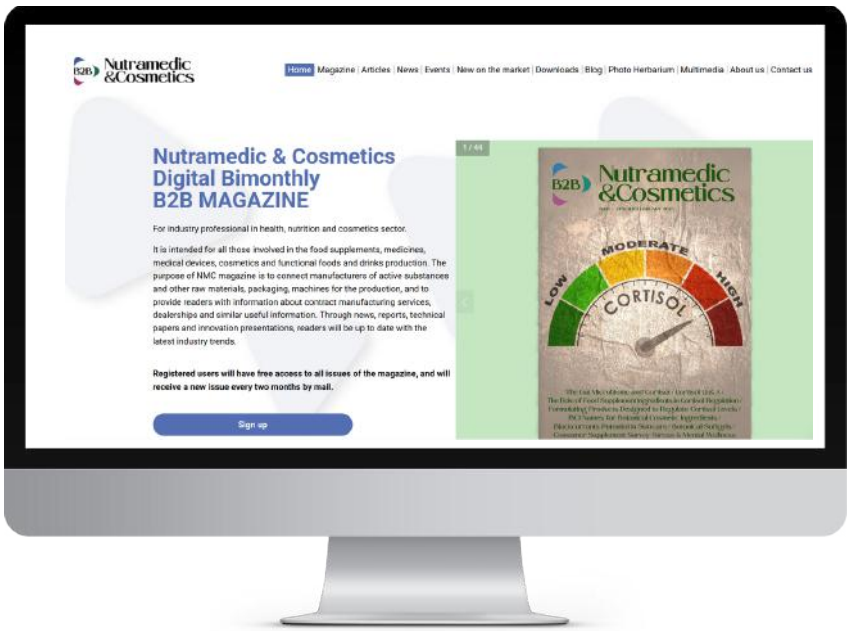

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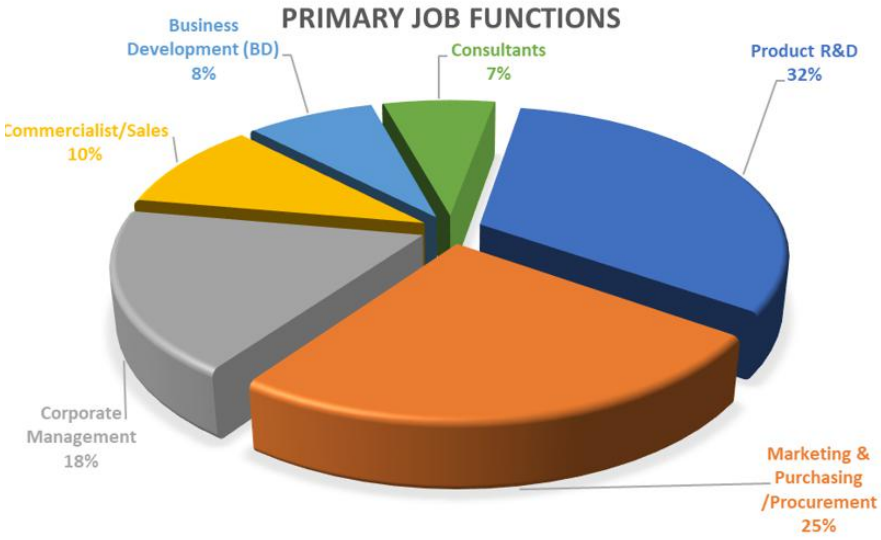

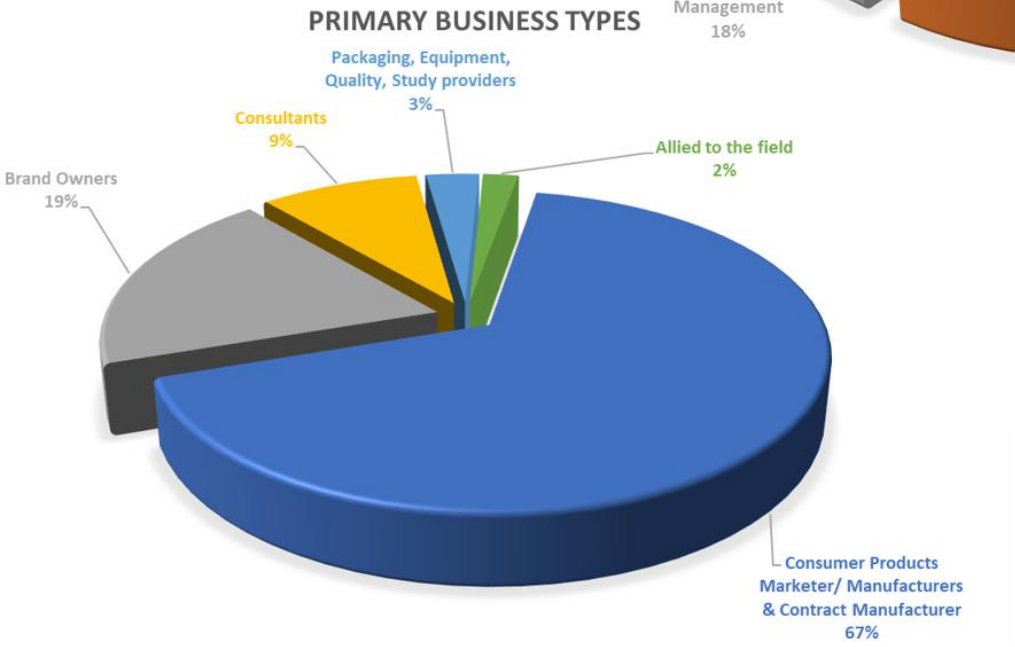

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