Bioiberica

2025 NEW PRODUCT INNOVATOR

Pioneering New Features and Functionality to Exceed Customer Expectations

RECOGNIZED FOR BEST PRACTICES IN THE EUROPEAN INNOVATIVE COLLAGEN SOLUTIONS INDUSTRY

FROST & SULLIVAN

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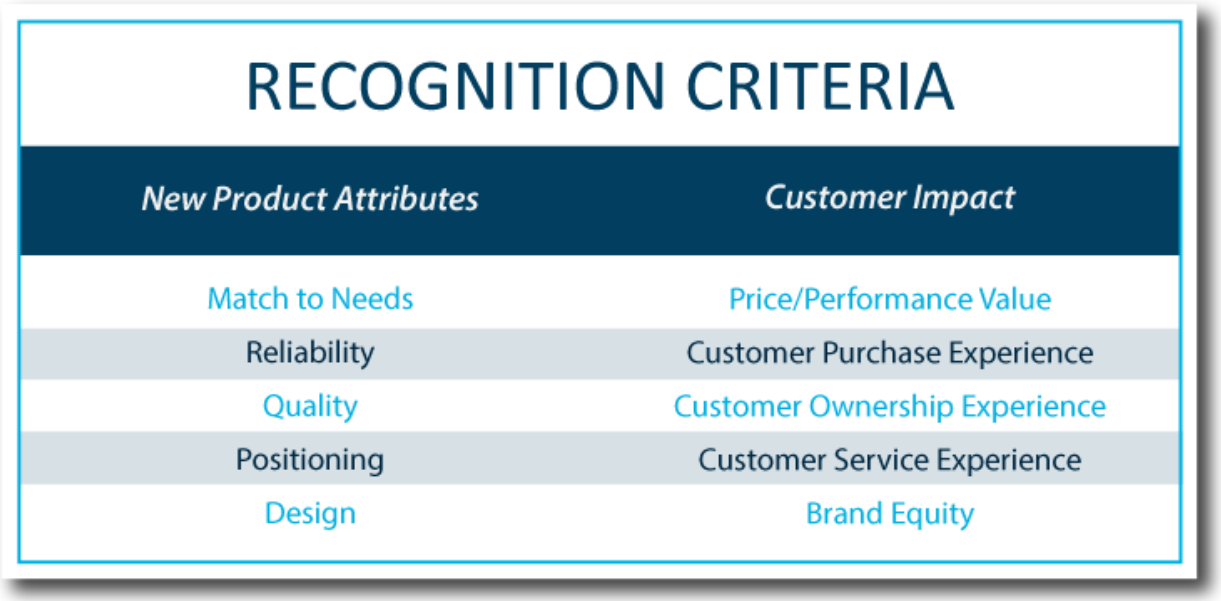
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Best Practices Criteria for World-class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Bioiberica excels in many of the criteria in the innovative collagen solutions space.



The Transformation of the European Innovative Collagen Solutions Industry

The European collagen solutions market continues to expand as consumers increasingly focus on health, mobility, and holistic wellness. The region is an early adopter of collagen-based products and serves as a key production hub for various collagen types, including peptides and undenatured collagen. Growing demand in the United Kingdom, Germany, France, and Spain reflects aging populations and rising interest among younger, health-conscious consumers seeking preventive and lifestyle-focused nutrition. Aging populations experience a higher prevalence of joint conditions, including osteoarthritis, which intensifies the need for clinically validated collagen solutions. Meanwhile, younger adults pursuing active lifestyles and fitness routines adopt collagen to support joint recovery, muscle maintenance, and overall mobility.

Collagen's versatility strengthens its market appeal and extends adoption across various product categories. Manufacturers incorporate native and hydrolyzed collagen into capsules, powders, gummies, ready-to-drink products, and functional foods due to high stability, low viscosity, neutral taste, and rapid absorption. These attributes enable companies to develop distinct formulations targeting clinical and lifestyle applications. Emerging applications in pet nutrition, cosmeceuticals, and animal health further expand market opportunities.

Competitive dynamics in the European undenatured type II collagen segment remain concentrated. Leading players control most of the market, and smaller competitors focus on alternative joint health ingredients such as glucosamine, chondroitin, curcumin, Boswellia serrata, and natural eggshell membrane. Undenatured type II collagen differentiates through a low daily dose requirement, an immune-

mediated mechanism of action, extensive clinical validation, and demonstrated joint health efficacy. Chicken sternum cartilage functions as the primary source (valued for its purity and molecular integrity), while marine-derived collagens, which are commonly hydrolyzed, gain interest due to sustainability considerations and usage in skin health products.

Demographic trends, lifestyle-driven adoption, evidence-backed differentiation, and expanding applications continue to drive growth in the European collagen market. These market conditions create a favorable environment for scientifically validated ingredients such as Bioiberica S.A.U. (Bioiberica)'s Collavant® n2 to capture market share and establish a credible high-performance position across clinical, lifestyle, and emerging nutrition segments.

Establishing Differentiation through Clinically Validated Collagen Innovation

Founded in 1975 and headquartered in Barcelona, Spain, Bioiberica developed Collavant® n2 as a native type II collagen ingredient for joint health. The company extracts the ingredient from chicken sternum cartilage and preserves the native collagen molecule throughout production. This structure enables a low effective dose of 40 milligrams per day through an immune-mediated oral tolerance mechanism that differs from hydrolyzed collagen peptides mechanism. Most collagen solutions in the European market rely on denatured collagen peptides that require gram-level daily doses and act through amino acid availability. Collavant® n2, however, provides a distinct formulation strategy based on molecular preservation and targeted biological interaction.

Bioiberica structured clinical programs to test Collavant® n2 across populations and contexts. One randomized, double-blind, placebo-controlled trial evaluated six months of daily supplementation in healthy adults experiencing joint discomfort after physical activity. The study measured self-reported joint comfort and mobility using the knee injury and osteoarthritis outcome score (KOOS) and monitored cartilage degradation with the C-terminal cross-linked telopeptides of type II collagen (CTX-II) biomarker. In the subpopulation with higher baseline movement pain (visual analog scale > 4 centimeters), participants taking Collavant® n2 recorded earlier KOOS improvements than those on placebo.[1] The placebo group showed a 20.6% increase in CTX-II after six months, consistent with progressive cartilage breakdown, while the Collavant® n2 group recorded an 18.3% reduction.[2] The trial also found faster post-exercise recovery among Collavant® n2 users, with the recovery-time gap widening over the study period.

A separate clinical study evaluated Collavant® n2 in women with knee osteoarthritis in a six-week comparison of three arms: Collavant® n2 supplementation, structured exercise, and no intervention. Collavant® n2 reduced the Western Ontario and McMaster Universities Arthritis Index (known as WOMAC) pain scores by 44.8% and increased six-minute walk distance by 10.6%, matching the improvements achieved through structured exercise.[3] Participants taking Collavant® n2 also showed gains in functional

[1] Möller, I. *et al.* Efficacy and tolerability of native type-II collagen for joint health in healthy volunteers: a randomized double-blind placebo-controlled study. *Osteoarthritis and Cartilage* **32**, 769 (2024).

[2] Möller, I. *et al.* Effect of Native (undenatured) Type-II Collagen in CTX-II Biomarker: Results from a Randomized Double-blind Placebo-controlled Study in Healthy Subjects with Joint Discomfort. *Journal of the Academy of Nutrition and Dietetics* **125**, A73 (2025)

[3] Santana, É. T. N. *et al.* Comparison between exercise therapy and non-hydrolyzed collagen (NHC-type II) in functionality and quality of life in women with knee osteoarthritis. *Wiener klinische Wochenschrift* **135**, 291-300 (2023).

performance and range of motion. These results indicate that Collavant® n2 delivers clinically meaningful mobility benefits across symptomatic and active populations.

Recognizing that finished-product customers pursue differentiated formulations, Bioiberica also tested Collavant® n2 in combination with established joint-health ingredients. Trials pairing Collavant® n2 with glucosamine and chondroitin sulfate, hyaluronic acid matrices, and botanical actives such as Boswellia serrata and curcumin reported additive improvements in joint function and symptom reduction in osteoarthritis contexts. These combinations expand formulation possibilities for manufacturers seeking a low-dose, mechanism-specific anchor ingredient alongside complementary actives.

> *"In a market that often relies on general statements of benefit, Collavant® n2 differentiates through mechanistic clarity, dose efficiency, and biomarker-supported cartilage protection. These attributes reduce the interpretation burden for healthcare professionals and increase confidence among finished-product developers who need clear, defensible evidence when choosing an active ingredient."*
>
> ***- Ain Sarah Aishah***
> ***Best Practices Research Analyst***

These clinical programs demonstrate a science-first development approach rather than trend-driven positioning. The clinical trials cover mechanisms of action, dose validation, safety, and applicability to different user groups, yielding reproducible outcomes that manufacturers can directly use as evidence-based claims. In a market that often relies on general statements of benefit, Collavant® n2 differentiates through mechanistic clarity, dose efficiency, and biomarker-supported cartilage protection. These attributes reduce the interpretation burden for healthcare professionals and increase confidence among finished-product developers who need clear, defensible evidence when choosing an active ingredient.

Frost & Sullivan commends Bioiberica for using clinical evidence to differentiate Collavant® n2 in the joint health segment. The company emphasizes measurable endpoints that permit direct comparison with collagen peptide formats and non-supplement interventions. This approach supports product innovation and positions Collavant® n2 in a distinct niche where competitors often lack mechanistic transparency.

Strengthening Manufacturing Integrity, Traceability, and Sustainable Reliability

Bioiberica maintains complete control over the sourcing and production of Collavant® n2 through a vertically integrated supply chain within the SARIA Group. The company processes raw materials, refines intermediates, and manufactures the final ingredients within a unified corporate ecosystem. This structure ensures full traceability from the source to the finished product and supports consistent quality across batches. Collavant® n2 is sourced and produced entirely in Europe, which strengthens supply reliability and ensures alignment with European regulatory standards.

Bioiberica operates its primary Collavant® n2 manufacturing facility in Palafolls, Spain. The company is among the leading producers of heparin active pharmaceutical ingredients (API) and applies pharmaceutical-grade process controls developed through more than five decades of experience producing biologically derived APIs. It incorporates the same frameworks into its nutraceutical ingredient production. Bioiberica adheres to the Good Manufacturing Practice (GMP), Good Laboratory Practice, and Good Clinical Practice standards, conducts extensive analytical testing, and undergoes regulatory audits.

Internal quality teams conduct more than 70,000 analyses each year and sustain more than 20 audits annually.[4] The company has also published over 30 scientific papers in the past five years and holds more than 50 patents across nine GMP-compliant facilities globally, maintaining full ingredient traceability.[5] These activities demonstrate a consistent, science-driven commitment to ingredient identity, structure, and stability.

The same manufacturing discipline extends to Bioiberica's sustainability framework. The company implements a unique circular economy model that valorizes over 90% of incoming raw materials and sources byproducts from the food value chain.[6] It regenerates and reuses portions of process water and pursues long-term emission reduction goals. These measures lower resource intensity while preserving product quality and compliance with environmental expectations. The integration of efficiency and environmental responsibility reflects an operational model that balances performance with sustainability.

Bioiberica's reliability also benefits from independent verification. The company obtained NutraStrong™ Collagen Verification for Collavant® n2. It is the first collagen ingredient manufacturer to achieve this certification. The verification provides trusted external confirmation that validates purity, source origin, and scientific substantiation, offering measurable transparency in a market where identity and consistency vary significantly. This independent standard reinforces customer confidence by validating Bioiberica's production claims through a third-party review.

Frost & Sullivan acknowledges Bioiberica for aligning product reliability with transparent manufacturing control rather than relying on downstream assurances. The company embeds pharmaceutical production standards in its nutraceutical operations, creating a high level of ingredient consistency. Its circular material use further reduces environmental exposure and raw material dependence, strengthening long-term supply security. These elements offer a reliability model that differentiates Bioiberica in the European collagen solutions market and fosters trust among formulation partners and brand owners.

Advancing Market Understanding and Customer Collaboration

The European collagen market faces widespread confusion regarding collagen types, dosage levels, benefits, and sourcing. Bioiberica addresses this challenge through coordinated educational initiatives that clarify technical distinctions for manufacturers, healthcare professionals, and distributors. The company published a scientific review explaining the structural and functional differences between native type II collagen and hydrolyzed collagen peptides.[7] This publication consolidates clinical and mechanistic data to guide evidence-based formulation and application choices. Market studies reveal that while 48% of consumers report familiarity with collagen, 45% remain uncertain, while 75% seek more information.[8] Additionally, 77% value branded ingredients, and 21% are willing to pay a premium for them, reflecting an opportunity for science-backed differentiation in joint health products.[9] These findings reinforce Bioiberica's focus on providing clear communication and training to improve consumer confidence.

[4] Corporate Presentation (Bioiberica, November 2025)
[5] Ibid
[6] Frost & Sullivan's Interview with Bioiberica (November 2025)
[7] Martinez-Puig et al. Collagen Supplementation for Joint Health: The Link between Composition and Scientific Knowledge. *Nutrients* **15** (2023).
[8] The Collagen Report (Bioiberica, November 2025)
[9] Ibid

To bridge this information gap, Bioiberica launched the Collagen Market Insights Report to provide manufacturers with updated data on consumer preferences, sourcing expectations, and delivery formats. The company also convened an expert panel that includes specialists in rheumatology, nutrition, orthopedics, formulation science, and market analysis. The panel contributes to its Collagen Symposium, a forum that examines emerging research, regulatory updates, and consumer trends while clarifying technical misconceptions in the collagen sector. The symposium has drawn participation from industry professionals, signaling demand for credible, science-led category education.

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>
> ***- Sreedevi Kakkad***
> ***Senior Research Analyst, TechVision***

Bioiberica extends this educational focus into direct collaboration. The company works closely with customers on product development, providing concept prototypes that combine Collavant® n2 with other joint-health ingredients and evaluating each concept for scientific validity, regulatory compliance, and stability. It supports analytical method development, claim substantiation documentation, and training for technical and commercial teams. Bioiberica also supplies validated formulation frameworks in capsule and gummy formats aligned with European claim regulations. These services enable customers to streamline product design and accelerate commercialization while maintaining scientific integrity.

This collaborative approach enables Bioiberica to contribute directly to customer product success, ensuring sustained product quality and regulatory alignment. Frost & Sullivan observes that the company mitigates market complexity through a combined model of scientific education, technical collaboration, and evidence-based communication. This integration strengthens customer decision-making and minimizes formulation risk, positioning Bioiberica as a stabilizing force within an evolving collagen market.

Expanding Delivery Formats and Regulatory Alignment

Bioiberica expands the application of Collavant® n2 beyond conventional capsule and tablet forms to align with growing demand for functional and lifestyle-oriented nutrition products. The company developed and validated new delivery prototypes, such as functional foods and gummies, performing formulation testing, organoleptic assessments, and analytical stability evaluations. The ingredient carries Generally Recognized as Safe status, Halal certification, non-genetically modified organism status, and allergen-free classification under the European Union and the Food Allergen Labeling and Consumer Protection Act. It also excludes substances on the World Anti-Doping Agency list, simplifying compliance for food, sports, and nutraceutical manufacturers. These technical attributes enable partners to position joint health benefits within convenient, consumer-friendly formats that align with current wellness consumption trends.

In an effort to translate this formulation versatility into market adoption, Bioiberica collaborates with food and beverage manufacturers to incorporate Collavant® n2 into functional foods such as dairy products to deliver structural and nutritional benefits. These type of partnerships require alignment on analytical validation and regulatory compliance to maintain ingredient stability and label accuracy in mainstream

food environment. The launch of innovative functional food and beverages containing Collavant® n2 demonstrate the functional integrity of Collavant® n2 under real-world market conditions, supporting its integration into high-volume consumer products while maintaining scientific credibility.

Bioiberica also addressed regional regulatory variation through a solvent-free production method that preserves the native molecular structure of collagen and eliminates the use of conventional solvents restricted in several Asia-Pacific markets. It enables entry into regions such as Japan, Korea, and Taiwan, where manufacturing regulations emphasize clean-label and solvent-free production. The method aligns with the company's commitment to ingredient purity and scientific consistency while expanding its global compliance framework.

These initiatives illustrate Bioiberica's ability to adapt Collavant® n2 to various formulation environments and regulatory requirements without altering its scientific foundation. Frost & Sullivan recognizes that the company enhances accessibility through delivery flexibility rather than reformulation, reinforcing the ingredient's credibility across clinical and lifestyle nutrition segments. Its strategy reflects a forward-looking approach to ingredient innovation, one that integrates technical validation, cross-industry collaboration, and regulatory foresight to sustain long-term market relevance and customer confidence.

Conclusion

With 50 years of experience, Bioiberica demonstrates a comprehensive approach to innovation in the European collagen solutions market, integrating scientific rigor, operational excellence, customer engagement, and adaptive product development. Clinically validated native type II collagen differentiates Collavant® n2, with research confirming efficacy at low doses and targeted biological mechanisms. Vertically integrated manufacturing, stringent quality controls, and sustainability-driven practices ensure consistent ingredient identity, structural preservation, and supply security, while independent verification and regulatory compliance strengthen stakeholder trust. The company extends this rigor through structured market education and collaborative engagement, enabling manufacturers and healthcare professionals to navigate category complexity, make evidence-based formulation decisions, and deliver products aligned with consumer expectations. Its forward-looking innovation ensures continued relevance across various delivery formats and regulatory contexts, expanding accessibility without compromising scientific integrity. This integrated approach addresses current market and customer needs while establishing a foundation for future developments, positioning Bioiberica as a benchmark for credibility, reliability, and customer-focused innovation in European collagen solutions.

For its strong overall performance, Bioiberica is presented with Frost & Sullivan's 2025 European New Product Innovation Recognition in the innovative collagen solutions industry.

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What You Need to Know about the New Product Innovation Recognition

Frost & Sullivan's New Product Innovation Recognition is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

Best Practices Recognition Analysis

For the New Product Innovation Recognition, Frost & Sullivan analysts independently evaluated the criteria listed below.

New Product Attributes

Match to Needs: Customer needs directly influence and inspire the product portfolio's design and positioning

Reliability: Product consistently meets or exceeds customer performance expectations

Quality: Product offers best-in-class quality with a full complement of features and functionality

Positioning: Product serves a unique, unmet need that competitors cannot easily replicate

Design: Product features an innovative design that enhances both visual appeal and ease of use

Customer Impact

Price/Performance Value: Products or services offer the best ROI and superior value compared to similar market offerings

Customer Purchase Experience: Purchase experience with minimal friction and high transparency assures customers that they are buying the optimal solution to address both their needs and constraints

Customer Ownership Excellence: Products and solutions evolve continuously in sync with the customers' own growth journeys, engendering pride of ownership and enhanced customer experience

Customer Service Experience: Customer service is readily accessible and stress-free, and delivered with high quality, high availability, and fast response time

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty, which is regularly measured and confirmed through a high Net Promoter Score®

Best Practices Recognition Analytics Methodology

Inspire the World to Support True Leaders

This long-term process spans 12 months, beginning with the prioritization of the sector. It involves a rigorous approach that includes comprehensive scanning and analytics to identify key best practice trends. A dedicated team of analysts, advisors, coaches, and experts collaborates closely, ensuring thorough review and input. The goal is to maximize the company's long-term value by leveraging unique perspectives to support each Best Practice Recognition and identify meaningful transformation and impact.

		VALUE IMPACT	
STEP		WHAT	WHY
1	**Opportunity Universe**	Identify Sectors with the Greatest Impact on the Global Economy	Value to Economic Development
2	**Transformational Model**	Analyze Strategic Imperatives That Drive Transformation	Understand and Create a Winning Strategy
3	**Ecosystem**	Map Critical Value Chains	Comprehensive Community that Shapes the Sector
4	**Growth Generator**	Data Foundation That Provides Decision Support System	Spark Opportunities and Accelerate Decision-making
5	**Growth Opportunities**	Identify Opportunities Generated by Companies	Drive the Transformation of the Industry
6	**Frost Radar**	Benchmark Companies on Future Growth Potential	Identify Most Powerful Companies to Action
7	**Best Practices**	Identify Companies Achieving Best Practices in All Critical Perspectives	Inspire the World
8	**Companies to Action**	Tell Your Story to the World (BICEP*)	Ecosystem Community Supporting Future Success

*Board of Directors, Investors, Customers, Employees, Partners

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Generator™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fueled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*



The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Megatrend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)

