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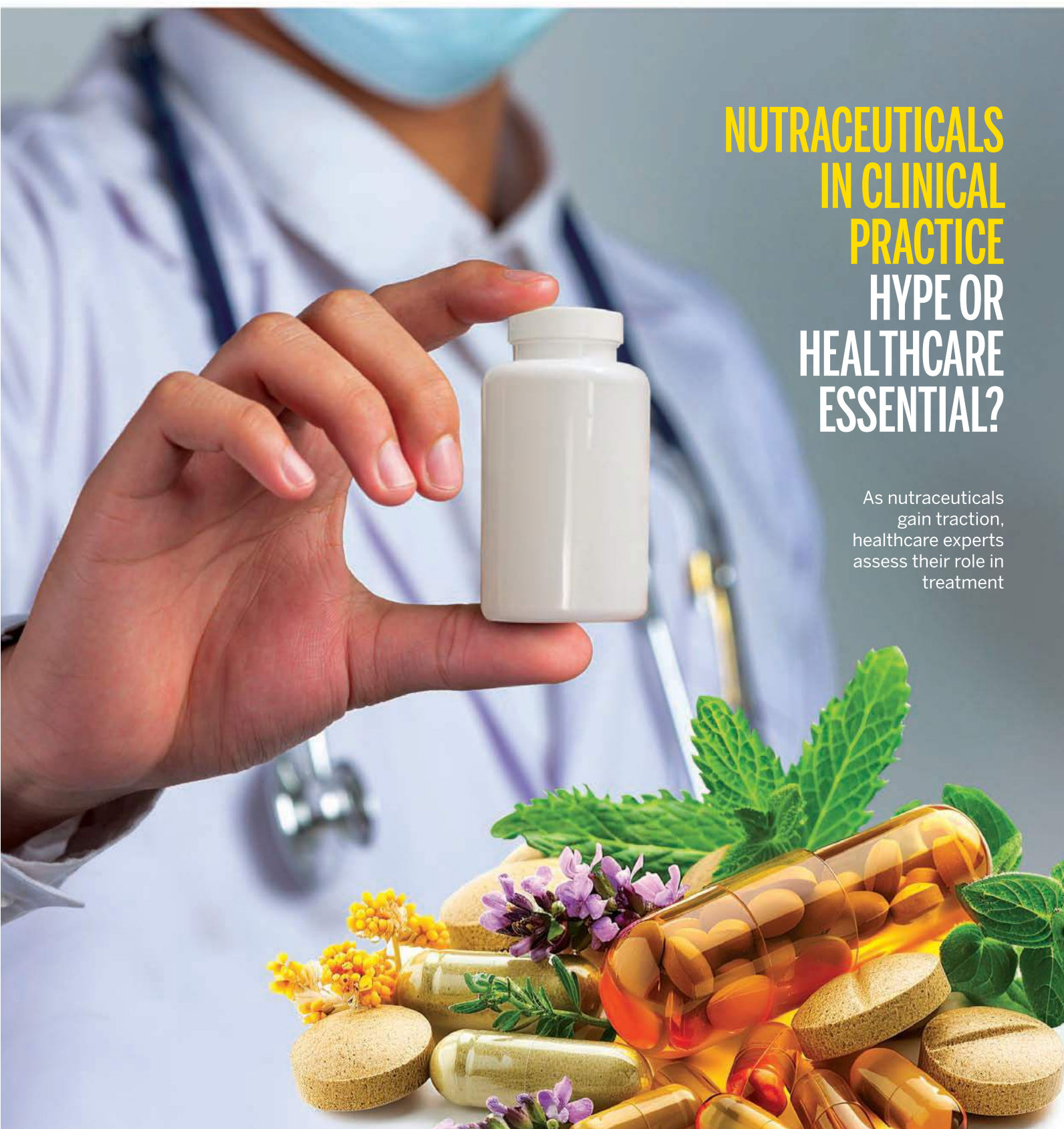
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Interview

Dr Pirthipal Singh
Head - R&D, Tirupati Group

Market trends

How Gen Y, Gen Z, and AI are driving Mission \$100 bn for India's nutra future



NUTRACEUTICALS IN CLINICAL PRACTICE HYPE OR HEALTHCARE ESSENTIAL?

As nutraceuticals gain traction, healthcare experts assess their role in treatment



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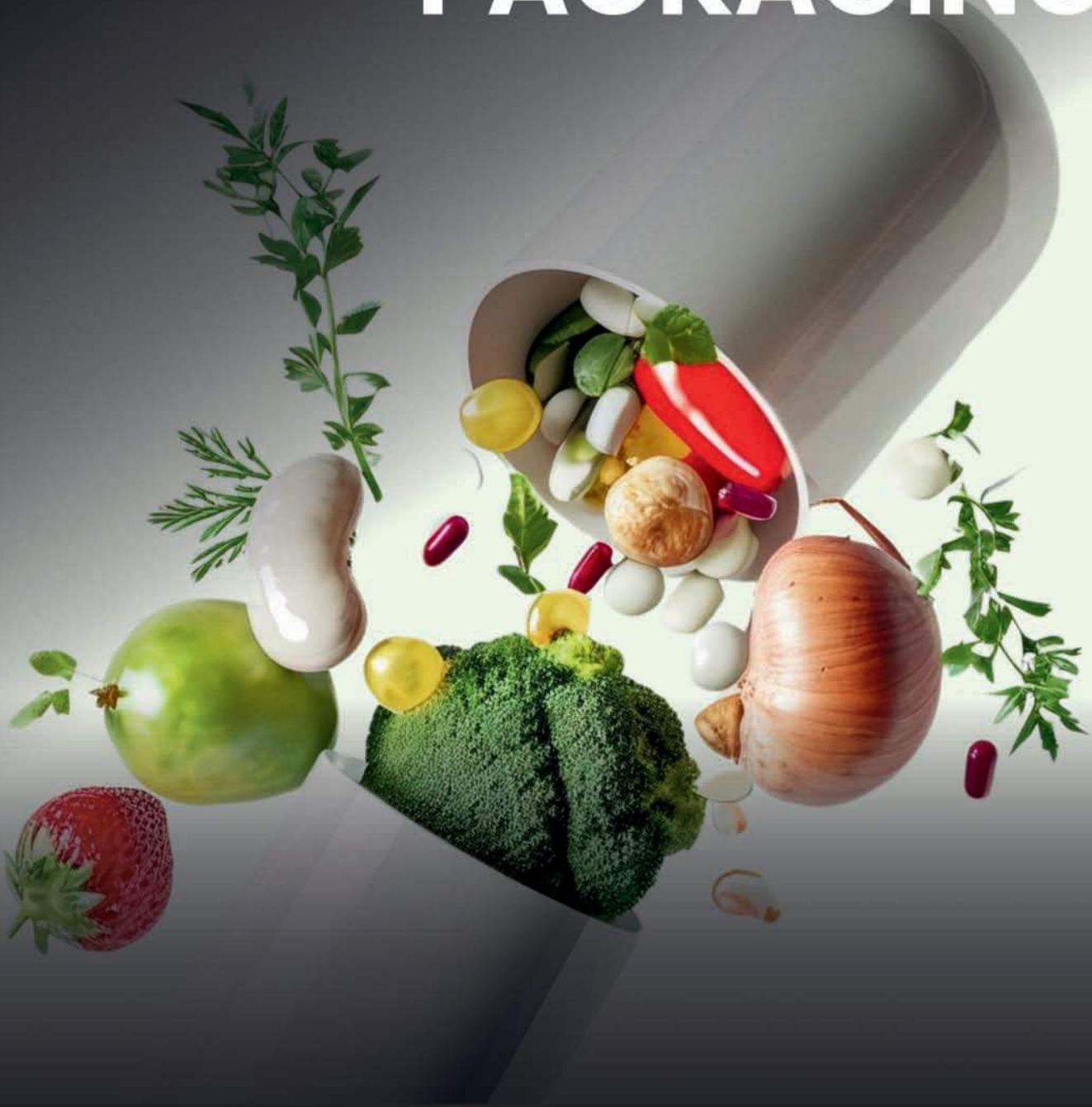
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Mohan Varadkar

COVER STORY

Nutraceuticals in clinical practice: Hype or healthcare essential?



17

10 INTERVIEW



Dr Pirthipal Singh

Head - R&D,
Tirupati Group

14 INTERVIEW



Dr Bilal Thangal TM

Medical Lead,
NURA

15 INTERVIEW



Sajeev Nair

Founder and Chairman,
Vieroots

21 REGULATORY WATCH

Bridging together traditional wisdom and modern medicine for holistic healthcare and promoting exports



Arpita Mukherjee

24 RESEARCH & INNOVATION

Alzheimer's Disease: Can nutraceuticals and gut microbiota offer new hope?



Prof Vijayaraghavan S

Formulations and quality: Key for effective nutraceuticals



Sharad Jaiswal



Eshana Mukherjee

26 MARKET TRENDS

How Gen Y, Gen Z, and AI are driving Mission \$100 bn for India's nutra future



Vikas Bansi



Sailesh S



Len Monheit



Nitin Lath

Infant Nutrition: Bringing it out of infancy



Dr Sumedha Nadkar

28 CLINICAL NUTRITION

Prioritise nutrition for leprosy elimination



Nikita Sarah



Subhojit Goswami

Show us the data



Another disconnect between the regulators and most nutra players is the need for rigorous scientific validation and transparency in product claims. Most clinicians too emphasise that all nutra products need to come with more data, backed by sufficiently large clinical trials to validate claims. In other words, they want evidence-based nutraceuticals, with the same rigour that pharma products are mandated to follow

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The Health Foods and Dietary Supplements Association (HADSA)'s recent Annual conference was an occasion for the nutra industry to flaunt their achievements, but also press for a range of policy changes.

On their part, representatives like Guest of Honour Pritee Chaudhary, Regional Director (West), Food Safety and Standards Authority of India (FSSAI) reassured stakeholders that the FSSAI prioritises governance over bureaucracy and aims to balance business needs with consumer protection.

Urging companies to ensure scientific validation and transparency in product claims, she underscored the importance of collaboration between industry and regulators to create a compliance-driven ecosystem.

One of my takeaways from the HADSA annual meet was that industry and policy makers seem to be at cross purposes on many issues, and will need to work hard to find common ground. For instance, Chaudhary emphasised the need for affordability and accessibility, stating that nutraceuticals must be competitively priced, ideally lower than pharmaceutical products, to drive wider adoption. The nutra sector is not currently under price control and therefore ROIs are better than pharma products. Most nutra players are aiming for the premium end of the market, to protect their profit margins.

Another disconnect between the regulators and most nutra players is the need for rigorous scientific validation and transparency in product claims, another ask from Chaudhary. The nutra sector generally follows the direct-to-consumer route, which means that consumers are faced with a plethora of choices, and would not need to consult a doctor when making their purchases, be it online or offline. While regulators have cracked down when product claims are blatantly misleading, there are many instances that manage to slip below the radar.

Clinicians warn that overuse and misuse of nutraceuticals is a serious concern. In fact, the cover story of the second edition of the bi-monthly Express Nutra (dated April-May 2025) features perspectives from the clinical fraternity. Most clinicians agree that the use of nutraceuticals is growing and concepts like precision nutrition could potentially be game changers. But they emphasise that all nutra products need to come with more data, backed by sufficiently large clinical trials to validate claims. In other words, they want evidence-based nutraceuticals, with the same rigour that pharma products are mandated to follow. They also refer to regulatory gaps, clearly uneasy with the lighter regulation of so-called health supplements etc being consumed on a daily basis, without clinical guidance.

FSSAI will have to walk the fine line of regulating the growing nutra sector, without stifling genuine innovation. Chaudhary indicated as much, when she reassured stakeholders that FSSAI prioritises governance over bureaucracy and aims to balance business needs with consumer protection and underscored the importance of collaboration between industry and regulators to create a compliance-driven ecosystem. For more details read a comprehensive report, which we filed as media partners to this well attended conference: <https://www.expressnutra.in/news/hadsa-annual-conference-2025-examines-innovation-regulation-and-market-growth-in-nutraceuticals/452382>

No one is dissing the case for nutraceuticals. On the business side, our April-May 2025 edition features interviews with leaders like Dr Pirthipal Singh, Head - R&D, Tirupati Group who analyses the strategic opportunities shaping the future of the nutra CDMO sector. Vikas Bansi, Business Director - India, OTC, Himalaya Wellness; Sailesh S, Partner, Anthill Ventures; Len Monheit, CEO, Industry Transparency Center, and Nitin Lath, MD, Stifel Investments believe that with the right strategies, India's nutra sector can achieve the ambitious \$100 billion target by 2047.

Experts writing in our April-May 2025 edition write about how nutraceuticals and gut microbiota are giving patients with Alzheimer's Disease new hope. Similarly, experts are urging the need to prioritise nutrition as part of the leprosy elimination programme, drawing parallels between the proven beneficial role of nutrition in reducing the risk of transmission and disabilities linked to tuberculosis (TB).

Catch all this and more on www.expressnutra.in. Do email with feedback and suggestions.

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The nutra CDMO space will shift toward high-tech, sustainable, and customised solutions

Dr Pirthipal Singh, Head - R&D, Tirupati Group, highlights key trends, regulatory challenges, and strategic opportunities shaping the future of nutra CDMO sector

What are the current trends shaping the nutra sector. How are these trends influencing your business and R&D priorities?

The global nutraceuticals market generated a revenue of \$317 billion in 2023, \$346 billion in 2024 and is expected to reach \$599 billion by 2030. The market is expected to grow at a CAGR (2024 - 2030) of 9.5 per cent by 2030. The nutra sector is evolving rapidly, driven by consumer demand for personalised health solutions, natural ingredients, and scientific validation. The current trends in nutra are:

1) Personalised nutrition: Advances in microbiome research, genetic testing, and AI-driven recommendations are fuelling demand for tailored supplements.

2) Say no to sugar: White sugar is being considered as white poison. Due to general awareness about the nutritional information (NI) table on the nutra and food label, there is no demand for the products with high sugar content, especially with added sugar content.

3) Sustainability and clean label: Consumers are prioritising eco-friendly sourcing, plant-based alternatives, natural colour and sweetener, no preservatives.

4) Holistic health and wellness: Products targeting gut health, cognitive function, immunity, and stress management are gaining traction.

5) Ready to drink (RTD) beverages and functional foods: There is a rise in demand for the nutritionally enhanced foods, including fortified snacks and beverages. Although RTD is the most preferred form of beverages in US and EU, powders for reconstitution is found to economically friendly format in India.

6) Clinical validation and scientific backing: Regulatory scrutiny and consumer demand for efficacy are pushing companies to invest in clinical trials and evidence-based formulations.

7) E-commerce and digital health integration: The growth of direct-to-consumer (DTC) brands and digital health tracking is reshaping marketing and distribution strategies.



As an innovation-based contract development and manufacturing organisation (CDMO), these trends are likely influencing our business in several ways:

1) Science based innovations: We are investing in developing clinically proven nutra products to establish the efficacy and to substantiate health claims.

2) Quality focus: The multicomponent analysis of nutra products presents a significant analytical challenge. The development and validation of robust analytical methodologies utilising advanced separation and detection techniques, including HPTLC, HPLC, LC-MS, GC, GC-MS/MS, AAS, and ICP-MS, have become essential for ensuring accuracy, specificity, and regulatory compliance.

3) Development time: Being a CDMO, majority of the clients has the expectation to develop products in a very short span of time.

4) Supply chain management: In a CDMO business, strategic supply chain planning is critical, requiring a firm procurement plan for the next three months and a forecast

extending to six months. Ensuring raw material availability is paramount to maintain uninterrupted production. For instance, the past six months have seen a global shortage of Whey Protein Isolate (WPI), highlighting the necessity of long-term procurement strategies and alternative sourcing solutions for business sustainability.

5) Digital and tech-enabled manufacturing: Adoption of AI and automation for improved production efficiency, quality control, and traceability. Integration of blockchain for transparent supply chain management and ingredient traceability.

How will the nutra CDMO space evolve over the next five years, and what opportunities or challenges do you foresee?

The nutra CDMO space is poised for significant transformation over the next five years, driven by regulatory shifts, technological advancements, and evolving consumer demands. Global markets (FDA, EFSA, TGA, etc.) and Food Safety and Standards Authority of India (FSSAI) will enforce stricter compliance, pushing CDMOs toward higher-quality production and clinical validation. CDMOs will need strong regulatory expertise to support brand owners in navigating these complexities. Demand for capsules and tablets will remain, but hydration drinks, mouth dissolving dosage forms, sugar free lozenges with innovative drug delivery solutions, and functional beverages will soar.

Opportunities for CDMOs

1) High-value customisation: Offering small-batch, specialised production for personalised nutrition brands.

2) Innovation in bioavailability and drug delivery systems: Investing in cutting-edge technologies like liposomal, nanoemulsion, and delayed-release systems.

3) Strategic partnerships: Collaborating with global MNC's biotech firms, ingredient suppliers, and digital health startups for innovative solutions.

4) Geographical expansion: Meeting

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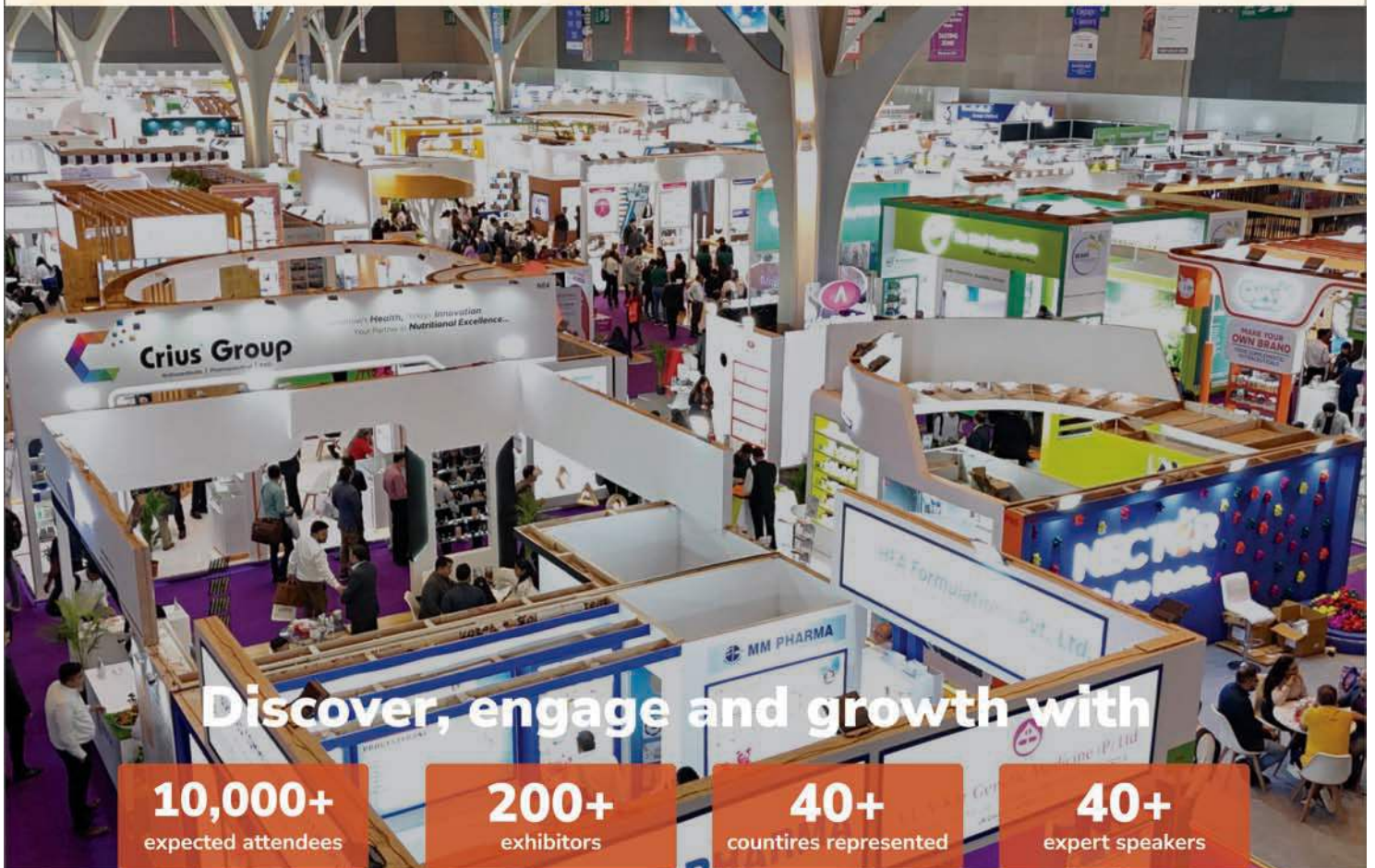
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demand for premium nutra products in US, Europe and emerging markets (APAC, LATAM, MENA).

5) Data-driven R&D: Leveraging AI to analyse consumer health data and predict future trends in supplement formulations.

Challenges to overcome

1) Regulatory complexity: More stringent policies mean higher compliance costs and longer development and approval timelines. On a long term this will be advantage for the organisations such as Tirupati Group focussing on the high quality and innovation.

2) Supply chain disruptions: Ingredient shortages and geopolitical factors may impact sourcing and pricing.

3) Capital-intensive innovation: Developing new technologies requires heavy R&D investment and skilled team.

4) Consumer trust and transparency: Rising demand for traceability and clinical validation may require new testing and certification processes.

The nutra CDMO space will shift toward high-tech, sustainable, and customised solutions, with innovation and regulatory expertise becoming key differentiators. Companies that invest in innovation, flexible manufacturing, advanced R&D, and digital transformation will emerge as leaders.

How do you navigate the complex regulatory landscape of the nutra industry, especially when working with global clients?

Navigating the complex regulatory landscape of the nutra industry-especially while working with global clients-requires a strategic, proactive, and compliance-driven approach. Here's how an innovation-based nutra CDMO like Tirupati Group can successfully manage these challenges:

1) Deep expertise in global regulatory frameworks: We maintain a dedicated regulatory affairs team that not only continuously monitors policy updates, but are also involved with the regulators in shaping the new policies and ensures adherence to country-specific compliance requirements.

2) Early regulatory involvement in product development: Regulatory considerations are integrated at the product designing stage to prevent compliance issues later. We work closely with clients to assess ingredient acceptability, claims substantiation, and labelling compliance as per FSSAI and

other regulatory bodies.

3) Strong quality assurance and cGMP compliance: We are among the few manufacturers in India with a dedicated nutra manufacturing facility, Tirupati Life-Sciences, designed to meet industry-specific production standards. In response to the increasing demand for protein powders, we have established Tirupati Wellness, a specialised facility exclusively for protein powder manufacturing. Both facilities operate in strict compliance with Current Good Manufacturing Practices (cGMPs) as per FSSAI regulations. Additionally, comprehensive regulatory dossiers are meticulously maintained to ensure compliance and product quality.

In an increasingly regulated and globalised nutra market, a proactive regulatory strategy is a key differentiator. By integrating compliance into product development, maintaining stringent quality control, and leveraging expert partnerships, your company can help clients successfully navigate market entry worldwide.

Are there specific product categories or geographic regions where you see significant opportunities for expansion in the nutra sector?

By focusing on high-growth product categories and expanding into emerging global markets, nutra CDMOs can position themselves as leaders in innovation, regulatory expertise, and scalable manufacturing.

- 1) Active nutrition and longevity supplements
- 2) Clinical nutrition
- 3) Hydration drink, functional food and beverages
- 4) Women's health and hormonal balance
- 5) Cognitive health and mental well-being
- 6) Hair, skin and nail
- 7) Sexual wellness
- 8) Protein supplements

How does your partnerships with ingredient suppliers, universities, or technology innovators drive your R&D and business strategies?

As an innovation-driven nutra CDMO, partnerships with ingredient suppliers, universities, and technology innovators are essential for staying ahead in a competitive and rapidly evolving industry. We have collaborated with number of universities on

development of platform technologies. These collaborations fuel cutting-edge R&D, enhance product differentiation, and strengthen regulatory compliance while opening new market opportunities. Strategic partnerships allow a nutra CDMO to stay at the forefront of innovation, compliance, and market trends. By integrating scientific research, cutting-edge ingredients, and smart manufacturing, companies can accelerate product development, enhance quality, and meet evolving consumer demands.

What is your approach to balance speed-to-market with maintaining high standards of safety, quality, and compliance?

As an innovation-driven nutra CDMO, achieving rapid product development without compromising on safety, quality, and regulatory compliance is a core priority. Our approach is rooted in an agile and multidisciplinary R&D framework, enabling the rapid conceptualisation, prototyping, and optimisation of nutra formulations. This efficiency is made possible by our highly skilled and specialised team, composed of experts in formulation science, analytical chemistry, regulatory affairs, packaging development, and process engineering.

The unwavering commitment of our management to advancing R&D is reflected in substantial investments in cutting-edge technologies, high-end analytical instrumentation, and scientific collaborations, ensuring a robust ecosystem for continuous innovation. Their strategic vision in allocating resources for research initiatives empowers our team to explore novel actives, advanced delivery systems, and scalable manufacturing solutions that align with evolving industry standards.

I take immense pride in leading one of the most talented teams in the nutra industry, whose expertise, precision-driven approach, and unwavering commitment to scientific excellence empower us to overcome complex formulation challenges, pioneer innovative product development, and adapt to dynamic market demands. Their collective proficiency ensures that we remain at the forefront of nutra innovation, compliance, and consumer health solutions.

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Nutrigenomics focuses on genetic predispositions to nutrient absorption, metabolism, and food sensitivities

Dr Bilal Thangal TM, Medical Lead, NURA, discusses nutrigenomics testing with **Kalyani Sharma**, highlighting how genetics-based nutrition insights can empower individuals to make informed dietary choices

How does nutrigenomics help in personalising dietary plans for individuals?

Nutrigenomics helps in understanding how an individual's body absorbs and metabolises nutrients like vitamins, minerals, and amino acids. It also identifies food sensitivities (e.g., lactose, gluten), enabling personalised dietary recommendations. Based on these insights, diet plans can be modified to improve overall health, prevent deficiencies, and enhance well-being.

What specific areas does nutrigenomics cover?

It provides insights into:

- **Absorption of vitamins and minerals:** Determines how efficiently the body processes essential nutrients.
- **Amino acid metabolism:** Evaluates how proteins are broken down and utilised.
- **Food sensitivities and intolerances:** Identifies genetic predispositions to lactose intolerance, gluten sensitivity, and other dietary concerns.

Is nutrigenomics testing necessary for everyone, or is it more suited for specific individuals?

It is not a mandatory test, but it can be beneficial for individuals who want to understand their body's unique response to food. People looking to optimise their diet, improve digestion, or manage food sensitivities may find this test especially useful. Anyone interested in scientific, genetics-based nutrition insights can consider taking it.

How often does one need to repeat this test?

Since this is a DNA-based test, it is conducted once in a lifetime. Unlike routine blood tests that change over time, genetic information remains constant, making the results valid for life. However, diet recommendations may evolve based on new research and lifestyle factors.

How is this test different from regular



Since this is a DNA-based test, it is conducted once in a lifetime. Unlike routine blood tests that change over time, genetic information remains constant, making the results valid for life. However, diet recommendations may evolve based on new research and lifestyle factors

nutritional or allergy testing?

Unlike traditional nutritional assessments or allergy tests, which measure current blood levels of nutrients or immune reactions to allergens, nutrigenomics focuses on genetic predispositions to nutrient absorption, metabolism, and food sensitivities.

- Allergy tests detect immediate immune responses to specific foods.
- Nutrigenomics analyses genetic factors that influence long-term dietary needs, making it a more comprehensive approach to personalised nutrition.

Is there a growing demand for these tests, and what factors are driving it?

Yes, the demand is increasing due to:

- **Rising awareness about genetics and nutrition:** More people are recognising the role of genetic factors in diet and health.
- **The shift toward personalised healthcare:** Moving from one-size-fits-all diets to tailored nutrition plans.
- **Growing interest in preventive healthcare:** Using scientific insights to optimise diet and prevent lifestyle diseases.

Which age group generally opts for this test?

Anyone above 10 years of age can take this test. Adults often seek it for weight management, fitness, and overall health, while parents may consider it for their children to address early nutritional concerns.

How do you ensure the privacy and accuracy of these tests?

At NURA, we prioritise data privacy and accuracy by using one of the world's most advanced genetic analysis technologies, Illumina sequencing, which offers high-coverage variant detection. We adhere to stringent data protection policies to safeguard personal genetic information.

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Nutra brands should build their own R&D based platforms that offer immense value addition

Sajeev Nair, Founder and Chairman, Vieroots, speaks about the evolving landscape of India's nutraceutical industry—from emerging D2C and platform-based models to the role of personalisation, subscription trends, regulatory shifts, and the challenges of scaling innovation in a competitive and capital-constrained market, in an interaction with **Lakshmipriya Nair**

What are the key emerging business models in the Indian nutra industry today?

Firstly, what we see as the foremost trend in the nutraceutical domain is more and more consumers starting to take charge of their health. They are not waiting for diseases to strike or even for their executive health check-ups to raise a red flag. Instead, they are getting proactive about preventing lifestyle diseases. Secondly, consumers are waking up to the infinite possibilities of personalisation. Today, thanks to personalised genomic solutions like Eplimo, it is possible to identify your genetic risks for various lifestyle diseases, years or decades before they develop, and take personalised lifestyle changes to keep such risks at bay. Supplementation by way of nutraceuticals play a key role in such solutions. This is also a major reason why nutraceuticals are witnessing a third major trend - a shift to pharma mode or therapeutic nutraceuticals, where the focus is on providing support in controlling and preventing specific diseases or conditions.

How are companies shifting from traditional B2B models to D2C approaches?

There are two approaches in this shift. First is the traditional B2B brands that so far relied on distributors and retail stores, developing their own ecommerce portals and also relying on third-party ecom sites. This has been going around for some time now, and I don't see it achieving much traction yet. The second trend is the pure play D2C brands emerging stronger in the last few years, and more players entering this key D2C nutraceutical space. These companies are the ones with more wind in their sails, even though they are relatively smaller now. The reason being that D2C brands tend to offer more differentiated or unique products, while B2B brands are known for more generic products that rely on marketing muscle and retail presence. For instance, there are well entrenched players for fish oil capsules in the



Nutraceuticals are witnessing a major trend - a shift to pharma mode or therapeutic nutraceuticals, where the focus is on providing support in controlling and preventing specific diseases or conditions

B2C space, whereas as a D2C brand, we have entered the market with Vieroots Krill Oil, which is a more bioavailable source for Omega-3s, and has been experiencing great traction.

What role do subscription-based models play in nutraceutical sales, and how successful have they been in India?

Though a couple of brands and technology service providers have hit the market with pioneering subscription models, they are yet to gain traction. The prime reason is the commitment cost, as consumers are as of now a bit averse to make long term commitments. It will take time for auto-fill subscription models like in the US, that are based on discounts, to catch up here. Secondly, nutraceuticals are often viewed with hope as an alternative to daily medicines, with consumers not really expecting to take the same nutraceuticals for years altogether. They would rather experiment with diverse offerings in the nutra space in the meanwhile. However, bundled offerings are seeing significant traction as repeat orders. For example, we offer various health stacks like for longevity, immunity, energy, cognition, heart, gut, and for stress and sleep. They contain between two to five separate products, like how Mito Complex and Nad Complex make up our Longevity Stack.

How are companies leveraging platform-based models (such as health-tech startups and online marketplaces) to scale their nutra businesses?

Online marketplaces like ecom portals tend to be a difficult venue to scale a nutraceutical brand sustainably. The traction that a brand experiences by way of sales may not translate to profitability and thus sustainability. Regarding health-tech startups and their own platform-based models, yes, it is a promising avenue. However, the products suggested should fit consumer needs perfectly. Consumers today have high discernment and they can easily see through schemes to push the platform's own products. Hence, it should be used judiciously, and only on a needs basis. We follow this approach at Eplimo, where each client's

combined genetic and metabolic analysis decides the nutrients that will help him or her immensely.

What are the biggest challenges in building a successful D2C nutraceutical brand in India?

With too much competition from both pharma companies and pure play nutraceutical firms, value addition remains the biggest challenge. A successful D2C nutraceutical brand will have to invariably identify unmet consumer needs, and undertake real R&D to develop effective and safe formulations to meet such needs. This is what we consistently do at Vieroots, and the reason why we could scale our D2C formulations within a short span of less than five years.

How are nutraceutical brands partnering with healthcare providers, nutritionists, and gyms to enhance customer trust and adoption?

From our own experience, what I can say is, such partnerships work better with platform based offerings like Eplimo, rather than stand-alone nutraceutical products. That is how we

could tie up with various speciality hospitals, clinics and doctors. What a nutraceutical brand is offering the clients of doctors, clinics, hospitals, nutritionists and gyms should be truly unique and invaluable, or in other words something that is not readily available from competing brands. For instance, a nutraceutical brand cannot simply go and tell a doctor to prescribe their protein powder as it is superior. Everyone else is doing it too! Rather, nutra brands should build their own R&D based platforms that offer immense value addition, and then try for tie-ups.

How are regulatory policies shaping the evolution of new business models in nutraceuticals?

Regulatory changes in the sector, especially for pharma companies, include the recent revisions to Schedule M that bans production of nutraceuticals in drug-licensed facilities so that cross-contamination is avoided. This may be an opportunity for pure play nutraceutical firms like Vieroots as it provides a more level playing field. However, the proposal to bring nutraceuticals under the

Central Drugs Standard Control Organisation (CDSCO) can affect both kinds of firms as it brings in an additional layer of regulatory bottlenecks.

What are the key challenges in scaling up new business models in India, and what solutions can help overcome them?

With the so-called funding winter continuing in India, scaling up will remain a challenge in the near to medium term in all sectors, including nutraceuticals. But the way to tackle it is to keep growing without funds, by meeting unmet needs of consumers and organisations. For example, at Vieroots, we are currently diversifying into the executive health check up domain, as we are pretty confident that our genomic solution Eplimo can provide immense value to such programs by focusing on prevention and performance, whereas most of the existing offerings deliver only by way of late stage protection and with no focus at all on improving individual and workforce level productivity.

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NUTRACEUTICALS IN CLINICAL PRACTICE HYPE OR HEALTHCARE ESSENTIAL?



Nutraceuticals in clinical practice: Hype or healthcare essential?

As nutraceuticals gain traction, healthcare experts assess their role in treatment

By Kalyani Sharma

In an evolution of healthcare beyond disease treatment to proactive wellness, nutraceuticals are emerging as a promising and popular compounds. These bioactive compounds, blend of nutrition and pharmaceuticals are now being recognised for their role in disease prevention and supporting holistic health.

But how do healthcare practitioners perceive them? Are they becoming a part of mainstream medicine, or do challenges in standardisation, regulation, and public perception hinder their growth?

Nutraceuticals in clinical practice: A growing trend?

The consensus among experts is clear: nutraceuticals are gaining traction, but they are yet to be considered standalone treatments.

“Nutraceuticals are becoming more mainstream in clinical practice, especially in preventive medicine,” notes Bhakti Samant, Chief Dietician, Kokilaben Dhirubhai Ambani Hospital, Mumbai

“For example, Omega 3 Fatty acids are commonly recommended for cardio-metabolic health and probiotics are often recommended for maintaining good gut health. While there is a growing body of evidence that supports the potential health benefits of these, there is a need for more robust large-scale and well-controlled clinical trials to validate the claims. Hence they are typically used as complementary strategies rather than replacements for the conventional treatment.”

Dr Hardeep Jogi, MD (Internal Medicine), Associate Consultant, ShardaCare Healthcity, Greater Noida, echoes this view, adding that widespread adoption depends on stronger evidence and standardisation.

Sweedal Trinidad, Chief Dietician, P. D. Hinduja Hospital & MRC, Mahim stresses, “Pandemics, health ailments and the urge



“Nutraceuticals are becoming more mainstream in clinical practice, especially in preventive medicine”

BHAKTI SAMANT
Chief Dietician, Kokilaben Dhirubhai Ambani Hospital



“Though the use of nutraceuticals, dietary supplements and herbs are considered safe, there is a need for rigorous toxicological testing”

DR SANJITH SASEEDHARAN
Consultant & Head Critical Care, S L Raheja Hospital



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DR HARDEEP JOGI
MD (Internal Medicine), Associate Consultant, ShardaCare Healthcity



“There is a halo of perception around the nutraceuticals that claim to contain natural active ingredients, one common misconception is that nutraceuticals are safe and natural, this may lead to usage without prescription or overuse”

SWEEDAL TRINIDADE
Chief Dietician, P. D. Hinduja Hospital & MRC

to stay younger have prompted patients and healthy individuals to increasingly include nutraceuticals as part of their preventive health regime and treatment plans, with growing interest in holistic and preventive healthcare. There is a halo of perception around the nutraceuticals that

claim to contain natural active ingredients, one common misconception is that nutraceuticals are safe and natural, this may lead to usage without prescription or overuse. One more misconception is that nutraceuticals can replace conventional medical treatment.”

Efficacy, safety and scientific backing

One of the biggest challenges in adopting nutraceuticals into mainstream medicine is the lack of scientific backing and quality control.

“Concerns include inconsistent formulations, bioavailability issues, and a lack of large-scale clinical trials. Clinicians rely on peer-reviewed studies, regulatory approvals, and pharmacokinetic data to determine credibility. Brands conducting independent research with published clinical results are preferred”, says Dr Jogi.

Dr Sanjith Saseedharan, Consultant & Head Critical Care, S L Raheja Hospital, points out that though the use of nutraceuticals, dietary supplements and herbs are considered safe, there is a need for rigorous toxicological testing. However, since this is



“Even when evidence exists, outcomes can be inconsistent due to variations in dosages, formulations, or individual patient responses”

DR JAGADEESH MENON VR
Paediatric Hepatology - Consultant,
Rela Hospital



Many patients wrongly believe that natural products have no side effects

USHA KIRAN SISODIA
Chief Dietician, Jaslok Hospital &
Research Centre

One of the biggest challenges in adopting nutraceuticals into mainstream medicine is the lack of scientific backing and quality control



“There should be strengthening enforcement of regulations, improving product standardisation, more comprehensive clinical trials and safety data, enhanced consumer education, better adverse event monitoring”

DR Y. JEGAN MOHAN
Consultant-General Medicine,
SRM Global Hospitals



“As a nutritionist I would recommend consuming scientifically tested supplements otherwise the consumption of counterfeit supplements”

VIJAYASHREE
Head and Chief Dietician,
MGM Healthcare

not a ‘drug’ there may not be a mandate to perform such checks. The other issue that may come up with some nutraceuticals is the interactions that some of them may have with existing medications. There have also been some reports of heavy metal contamination, mycotoxins, phytotoxins, etc. which may lead to health hazards.

Dr Jagadeesh Menon VR, Paediatric Hepatology - Consultant, Rela Hospital Chennai also shares, “One of the primary concerns is that many nutraceuticals are not supported by large, well-designed clinical trials. Practitioners often look for stronger evidence from randomised controlled trials (RCTs) before endorsing them. Without sufficient clinical evidence, it’s difficult to assess whether a nutraceutical can produce consistent and reliable benefits in humans. Even when evidence exists, outcomes can be inconsistent due to variations in dosages, formulations, or individual patient responses. This inconsistency can make

practitioners wary about recommending specific products.”

Regulatory gaps: A barrier to trust?

In India, nutraceuticals are regulated by the Food Safety and Standards Authority of India (FSSAI), but experts believe the regulatory framework still has significant gaps.

Dr Y. Jegan Mohan, Consultant-General Medicine, SRM Global Hospitals, Chennai, highlights that, “While India’s regulatory framework for nutraceuticals, mainly governed by FSSAI, aims to ensure the safety and quality of these products, there are several gaps that need to be addressed. These include issues with enforcement, standardisation, health claims, herbal product regulation, and post-market surveillance. To address these gaps, there should be strengthening enforcement of regulations, improving product standardisation, more comprehensive clinical trials and safety data, enhanced consumer education, better adverse event monitoring, addressing the herbal product gap.”

The increasing health awareness among consumers has led to a surge in the use of nutraceuticals, but misconceptions are still an issue. Usha Kiran Sisodia, Chief Dietician, Jaslok Hospital & Research Centre, notes that many patients wrongly believe that natural products have no side effects.

Vijayshree, Head and Chief Dietician, MGM Healthcare, stresses the importance of proper assessment before supplementing. “These days nobody is really assessing whether the patient is having a deficiency or not. So, if someone is experiencing a leg pain. Then they self-diagnose it to be vitamin D or B12 OR C deficiency and they are buying over the counter. As a nutritionist I would

In India, nutraceuticals are regulated by the Food Safety and Standards Authority of India (FSSAI), but experts believe the regulatory framework still has significant gaps

recommend consuming scientifically tested supplements otherwise the consumption of counterfeit supplements without any deficiency or if you’re consuming extra it goes waste because the body will accept only the recommended or recovered amount.”

“As a matter of fact, we all know that our body itself is self-producing enough number of vitamins and minerals that is required for our body. So, if we take additional supplements the excess will be excreted through urine and the metabolism of our body gets disturbed. But in some cases, the extra nutrients can become toxic causing organ damage especially our kidneys which excretes all that is excess in our body. So, when we start consuming excess sugar, salt, spice or even nutrients the acidity of the urine is increased. When the urine is in the kidney, it is acidic as a result there is high chance for formation of kidney stones”, she explains

Future prospects: What’s next?

Looking ahead, experts believe that technological advancements will shape the nutraceutical industry.

Sisodia believes that innovation is key to success as with research it’s obviously a

great way for professionals to cure patients. I foresee this as positive outcomes with more better products and good result

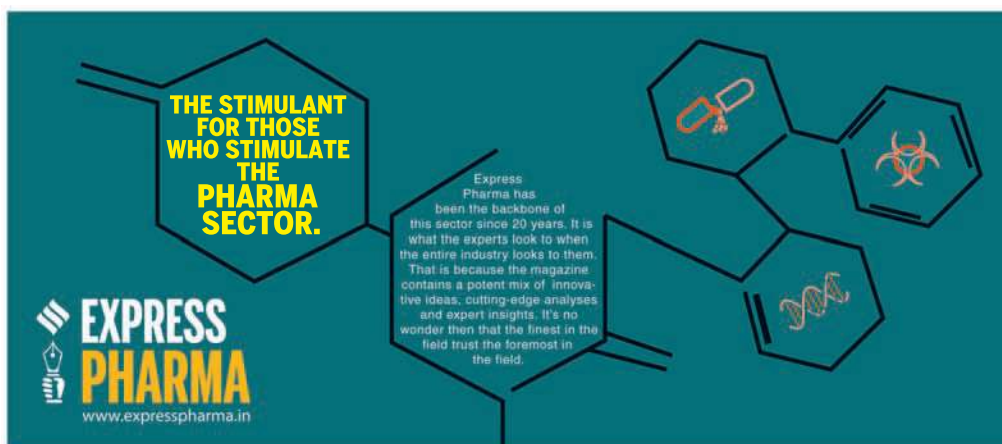
Dr Jogi sees promise in precision nutrition (AI-driven personalised supplements), nano-formulations (improved bioavailability), gut-brain axis research (probiotics in neurological health) and adaptogens (ashwagandha in stress management). The future lies in evidence-backed integration into personalised medicine.

Dr Saseedharan concludes, “Nutraceuticals is a rather exciting field, which in my opinion will revolutionise health care. This shift could eventually disrupt the healthcare system by transforming it from one focused on treating disease to one centered on maintaining health. In the near future, patients may pay the healthcare industry not only for treatment but for proactive health maintenance and disease prevention.”

“A holistic approach to healthcare made possible by bridging the gap between nutrition and pharmacotherapy through nutraceuticals will be key to achieving optimal health. Personally, I incorporate several well-proven, evidence-based nutraceutical products into my routine, alongside a healthy lifestyle and eating habits, and I have seen excellent results. Therefore, I would strongly recommend others consider doing the same, but always under close medical supervision”

Addressing the regulatory challenges, ensuring scientific validation, educating consumers for informed decision-making is the need of the hour as nutraceuticals continue to grow.

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Bridging together traditional wisdom and modern medicine for holistic healthcare and promoting exports

Arpita Mukherjee, Professor and **Eshana Mukherjee**, External Consultant, Indian Council for Research on International Economic Relations (ICRIER) stresses on the need for a Turmeric Board and other policy changes to promote the growth of high yield varieties of turmeric

As global consumers increasingly seek functional foods and natural remedies to boost immunity and achieve holistic healthcare, the nutraceutical industry—described as ‘food or food components that offer health benefits beyond basic nutrition’—has grown into a multi-billion-dollar industry. Projected to expand rapidly in the coming decade, the global market for food, pharmaceuticals and biotechnology sectors was valued at around USD 400 billion in 2024.

With its traditional knowledge rooted in rich heritage—particularly in Ayurveda—India has the potential to become a key player in this rapidly growing nutraceutical market, which is now combining traditional knowledge with modern science and research.

Laying a strong foundation for preventive healthcare, the traditional medicine system centres around remedies using herbs and spices for a natural approach to health and well-being. India accounts for around 89 per cent of the Ayurveda market and is one of the largest herb and spices producers in the world. This makes the country an important destination for global nutraceutical companies to develop products with traditional Indian spices and herbs for boosting immunity and preventing illness. Among these, turmeric stands out as a widely recognised superfood. Celebrated for its anti-inflammatory and anti-cancer properties, turmeric, which is rich in curcumin content (higher than 5 per cent), is extensively used as the ‘wonder drug of life’ to prevent and manage various illnesses. With its several health benefits, it has emerged as a key ingredient in nutraceuticals and functional foods, with studies also recognising its effectiveness in wound healing, diabetes management, cardiovascular health and as an anti-allergen agent.

As consumers in developed countries such as the USA and the EU seek healthier options, the market for nutraceuticals using turmeric has a huge untapped potential. Today, India leads the global turmeric production,



Arpita Mukherjee

supplying over 70 per cent, as of FY 2022-23, and contributes to more than 66 per cent of global turmeric exports. However, much of this turmeric is used for food and does not meet the curcumin level and quality requirements of the nutraceutical industry. In fact, due to this, India imports turmeric, particularly the dry variety, mainly from Vietnam, Indonesia, and Myanmar, to meet its domestic demand.

More than 30 varieties of turmeric are cultivated in India across more than 20 states, with curcumin content varying significantly. Most of these varieties, like the Salem, Armoor, and Sudarshana turmeric, have less than 4 per cent curcumin content, limiting their use in health and nutraceutical products. Among the seven geographic indications (GI) turmeric varieties, curcumin content ranges from 2.5 – 4.5 per cent in Erode Manjal (Tamil Nadu) and 3.45 per cent in Sangli (Maharashtra), to 6.12 per cent in Waigon (Maharashtra) and 6.8–7.5 per cent in Lakadong (Meghalaya). The high-curcumin varieties, like Waigon and Lakadong turmeric, are gaining international attention for their medicinal benefits, yet their production remains insufficient to meet the rising global demand.

As global demand rises for high-curcumin, low-residue turmeric, India must enhance



Eshana Mukherjee

R&D, innovation, and quality standards to sustain its dominance and move up the value chain from raw exports to nutraceuticals. Leveraging its Ayurvedic heritage, India can develop new herb- and spice-based products. Establishing clear standards for Ayurveda, as initiated by FSSAI, will further integrate traditional Indian medicine into the mainstream global nutraceutical, functional food, and preventive healthcare industries.

Setting up the Turmeric Board will give this sector focused attention. The Board can drive targeted strategies for growth and government support for scaling up high-curcumin turmeric production, and developing value-added products. It can also work with the Ministry of Commerce and Industry to promote value-added products in export markets and market diversification.

By prioritising research, standardisation, and high-value product innovation, India can position itself as a global leader in turmeric-based nutraceuticals, transforming its ancient herbal knowledge into a modern healthcare powerhouse. To achieve this, strong collaboration between government bodies, industry players and research institutions is essential.

Infant Nutrition: Bringing it out of infancy

Dr Sumedha Nadkar, Pharma Consultant and Visiting Faculty, recommends a focused regulatory pathway with collaboration with industrial bodies to pave the way for an ethical, sustainable growth of the infant food industry

“A baby fills a place in your heart that you never knew was empty.” — Anonymous This quote speaks volumes about the joy and warmth that a baby brings into our lives.

However, this sentiment may not hold true for all parents at all times.

A recent conversation with a friend—who was desperately searching for a “special” infant formula for her baby diagnosed with Chronic Kidney Disease (CKD)—caught my attention. While this baby was fortunate to receive a one-year supply of Similac 60/40 from the US, not every infant is so lucky. Upon some preliminary research, I found that this formula has import restrictions and is not available for sale in India. Despite being a core pharma professional, I did not delve further at the time.

Yet, I now feel a deep sense of responsibility to highlight the gaps that exist in this space. These can potentially be addressed through collaboration between regulators and players in the infant food industry—without much delay or deliberation.

Let us look at some key considerations and needs within the infant nutrition sector, especially for infants with CKD:

a) Key risk factors

Infants with CKD are often at risk due to factors such as increasing maternal age, maternal nutritional deficiencies, and health conditions like diabetes.

Although breastfeeding is the recommended method for feeding infants with CKD, they often need supplementary formulae that have a low renal solute load—especially low phosphate and potassium content.

The consequences of inadequate nutrition for these infants are serious: stunted growth, impaired final height potential, abnormal body composition, cognitive delays, and even increased mortality.

b) Key statistics

India's baby food and infant formula market reached \$6.0 billion in 2024. It is expected to grow to \$9.3 billion by 2033, at a CAGR of



4.73 per cent during 2025–2033 (Source: IMARC Group). This growth is driven by rising awareness about child nutrition and developmental needs among Indian parents.

c) Is infant food for “special” needs still in its infancy in India?

Despite the expanding infant nutrition market, awareness and access to specialised baby food—beyond relatively common needs like lactose intolerance—remains limited.

The Food Safety and Standards (Foods for Infant Nutrition) Regulations, 2020 govern the manufacturing, labeling, and sale of infant milk substitutes and foods for special medical purposes intended for infants.

These regulations are largely aligned with the Codex Alimentarius (WHO), a global standard for food safety. Yet, implementation and enforcement in the Indian context remain inconsistent and questionable.

d) Key innovations

Ready-to-feed products that are portable, nutrient-rich, and convenient are boosting market growth. Factors such as rising disposable incomes, increasing female workforce participation, and urbanisation are contributing significantly.

Millennial and Gen Z parents are more aware and informed. Some of the notable innovations in this space are formulas with

Omega-3 fatty acids, prebiotics like Galacto-oligosaccharides (GOS) and Fructo-oligosaccharides (FOS), and probiotics such as lactose-free formulas are also available to meet the needs of babies who suffer from lactose intolerance.

e) Notable actions by Indian regulators

Here's the proofread version with minimal corrections for grammar, language, and clarity:

Certain steps by FSSAI are laudable such as in 2018, when FSSAI permitted import of highly specialized life-saving formulas. This was a boon for kids suffering from inborn errors of metabolism like Phenylketonuria, Galactosemia, Tyrosinemia, etc. as well as hypo-allergenic formulas for infants suffering from cow milk allergy.

Even though CKD and certain other insufficiencies is a highly niche segment and the volumes are quite low, many companies are still investing here despite poor margins as a moral gesture.

◆ In July 2021, The FSSAI made amendments to the Food Safety and Standards (Foods for Infant Nutrition) Regulations, 2020. (First Amendment Regulations, 2022) and these came into effect on 1st October 2022.

Some of the amendments are as follows:

◆ The labelling of the food for infant nutrition shall be in accordance with Food Safety and Standards (Labelling and Display) Regulations, 2020.

◆ Sub-regulation 3 has been added under regulation 7 for Infant Formula which states that where an infant formula in powder format is manufactured without use of any vegetable oil, linoleate, vitamin E, starch, specified food additive and optional ingredients, the product may be named as 'Infant Milk Food'.

◆ The limits for Vitamin B12 under the requirement per 100 g and requirements per 100 kcal have been increased from 0.25 - 0.70 mcg and 0.05 - 0.15 mcg respectively to 0.25 - 4.0 mcg and 0.05 - 0.90 mcg respectively for

both Infant Formula and Follow-up Formula.

◆ Packaging gases carbon dioxide and nitrogen have been added for use at GMP for follow-up formula.

Even as FSSAI expert panel reviews norms and prepares recommendations, a startling report brought to light an investigation by the Swiss investigative agency revealed that the international food giant Nestlé adds sugar to powdered baby food in low- and middle-income countries including India, but not in rich countries.

Recent controversy and actions

Currently a FSSAI expert panel has been assigned to assess existing Food Safety and Standards (Foods for Infant Nutrition) Regulations, 2020, meant for packaged food items for infants and toddlers aged 6-24 months. The panel is reviewing norms that allow 20 per cent carbs in form of sugar in baby foods and is working on making suitable recommendations.

Our action? It is expected that recommendations from the panel are likely in a few months and will lead to revised draft regulation for infant nutrition. This will then be put in the public domain for feedback. What the exact timelines of this project are is not yet understood, at least not publicly.

g) The US scenario

In the US, it is the FDA which regulates the production of infant formulas to help ensure that these products are safe and support healthy growth in infants who consume them. Moreover, the agency also takes steps to educate parents and caregivers with the latest information on care for both full term as well as low birthweight infants. Infant Formula | FDA The formulas are broadly categorised as Routine formulas and Specialty formulas; we have a similar one in India as well.

Operation Stork Speed by USFDA

In March 2025, USFDA announced 'Operation Stork Speed' to improve infant formula in an effort to guarantee "the ongoing quality, safety, nutritional adequacy, and resilience of the domestic infant formula." The process involves issue of a 'Request for Information' to start the first comprehensive update and review of infant formula nutrients. This will be followed by intensive testing for heavy metals and other contaminants. Formula companies will be encouraged to

IMPORTANT CHALLENGES TO ADDRESS

- ◆ Can we bring infant products under a centralized regulatory authority (e.g., FDA equivalent) and reduce ambiguity?
- ◆ How do we instill confidence that "Made in India" infant products are safe, affordable, and accessible?
- ◆ How can we better educate parents and caregivers—especially about specialised nutritional needs?
- ◆ Can we scale up customised formula production for niche needs using e-commerce platforms for wider dissemination?
- ◆ Should we rethink import regulations and incentivise companies addressing special nutritional needs, similar to the approach for orphan drugs?
- ◆ Can exemptions be granted from clinical trial requirements (applicable to drugs) for infant nutrition, relying instead on evidence-based safety of individual constituents?

proactively engage with the FDA to address questions, focusing on increased transparency. Communication with consumers and industry stakeholders on significant developments will be stepped up. Last but not the least, the FDA will collaborate with the National Institutes of Health and other scientific organisations to address critical gaps in scientific research concerning the short- and long-term health outcomes linked to formula.

Swift actions by USFDA

One particular event recall in Dec'23 highlights the swift action FDA has taken. The Israeli Ministry of Health had notified the FDA on Dec. 14 that Nutramigen Hypoallergenic Powdered Infant Formula produced at the Mead Johnson Nutrition Zeeland, Michigan, facility, which was imported was tested at the Israeli border during routine sampling. The FDA immediately commenced a for-cause inspection at Reckitt/Mead Johnson Nutrition's Zeeland facility on Dec. 18 that included collecting environmental samples as well as testing additional samples of finished product from the same batch of Nutramigen infant formula powder tested by Israel.

On Dec. 29, Reckitt/Mead Johnson Nutrition agreed to initiate a voluntary recall of 675,030 cans of Nutramigen powdered infant formula distributed to the US. USFDA immediately alerted parents, caregivers, and health care providers about the possibility of Cronobacter sakazakii contamination. Even though no illnesses had been reported in connection with this recall, the agency took

prompt action at every stage of the supply chain to complete the recall in order to protect the most vulnerable population.

The Indian scenario

Back home, albeit late, we have woken up to the fact Nestlé adds sugar to powdered baby food in low- and middle-income countries including India, but not in rich countries after a report by an investigation by the Swiss investigative agency. The recent HADSA conference, the Vitafoods B2B exhibition certainly highlighted the exploding impact of the nutraceutical industry and hopefully the impact will be seen speedily. While we may not exactly act swiftly like "Operation Stork," we should not act like a clucking hen either.

Conclusion

A focused regulatory pathway with collaboration with industrial bodies such as HADSA etc. will pave the way for an ethical sustainable growth of the infant food industry while nurturing our most important asset, our future Indian citizens.

References

- <https://www.imarcgroup.com/india-baby-food-infant-formula-market>
- <https://theprint.in/health/nestles-double-standard-baby-food-has-added-sugar-in-india-not-in-rich-countries/2046184/>
- <https://medicalxpress.com/news/2025-03-fda-stork-infant-formula.html>
- <https://medicalxpress.com/tags/scientific+research/>

Alzheimer's Disease: Can nutraceuticals and gut microbiota offer new hope?

Prof Vijayaraghavan S, Director-Scientific Affairs, Velbiom Probiotics highlights how traditional approaches to Alzheimer's are being re-evaluated as science uncovers links between nutrition, gut health and brain function

Alzheimer's disease (AD), a neurodegenerative disorder first described by Alois Alzheimer in 1906, remains one of the most formidable medical challenges of our time. Characterized by progressive memory loss, cognitive decline, and behavioural disturbances, AD disrupts millions of lives globally.

Nobel laureate Dr Eric Kandel once remarked, "Memory is everything. Without it, we are nothing." Alzheimer's doesn't just rob individuals of memory—it erodes identity, independence, and quality of life.

AD is the most common cause of dementia worldwide, accounting for 60-70 per cent of cases. According to the World Health Organization (WHO), more than 55 million people globally suffer from dementia, and this number is expected to rise to 139 million by 2050 due to ageing populations. In India, the burden is growing at an alarming rate, with over 5.3 million cases recorded in 2020, a figure projected to triple by 2050. The lack of awareness and the stigma associated with dementia exacerbate the problem, leaving many cases undiagnosed until the later stages.

At its core, AD results from the accumulation of two toxic proteins in the brain: beta-amyloid plaques and tau tangles. These disrupt communication between neurons, triggering inflammation and oxidative stress, ultimately leading to neuronal death. Another key player is neuroinflammation, exacerbated by an overactive immune response, which further damages brain cells. As Dr Alois Alzheimer described in his landmark case study, "A peculiar severe disease of the cerebral cortex" manifests in these microscopic changes, which progressively impair cognition.

Dr Dale Bredesen, a prominent neuroscientist, has highlighted the potential of integrative approaches, "Alzheimer's should not



be a death sentence. A multi-modal approach, including diet, exercise, and targeted nutraceuticals, can reverse cognitive decline in early stages."

Nutraceuticals—bioactive compounds found in food—have garnered attention for their neuroprotective properties.

- **Curcumin** (from turmeric) is a potent anti-inflammatory and antioxidant compound has shown promise in reducing beta-amyloid plaques and improving cognitive function.

◆ **Resveratrol** (from grapes and berries): Studies suggest it enhances brain plasticity and reduces neuroinflammation.

◆ **Omega-3 fatty acids** (found in fish and flaxseeds): Known to promote neuronal health and reduce oxidative damage.

◆ **Bacopa Monnieri (Brahmi)**: Traditionally used in Ayurveda, it enhances memory and protects neurons from degeneration.

◆ **Vitamin E and C**: These antioxidants play a crucial role in neutralising free radicals that contribute to neuronal damage.

The gut-brain connection: A new dimension in Alzheimer's research

Emerging research suggests a fascinating link between gut health and neurodegeneration. The gut microbiota—the trillions of microbes residing in our intestines—play a crucial role in brain function through the gut-brain axis. Imbalances in gut bacteria (dysbiosis) have been linked to increased inflammation and amyloid plaque formation in the brain.

Probiotics, the beneficial bacteria found in yogurt, kefir, and fermented foods, may offer neuroprotective effects. Studies indicate that

probiotics can reduce systemic inflammation, improve gut permeability, and enhance neurotransmitter production. Notably, a 2016 study in *Frontiers in Aging Neuroscience* found that probiotic supplementation improved cognitive function in AD patients over a 12-week period.

Future perspectives

The convergence of nutraceutical science and gut microbiota research offers an exciting avenue for AD treatment. While pharma breakthroughs remain crucial, dietary interventions and probiotics could serve as adjunct

therapies to delay or prevent disease onset. As Dr David Perlmutter, a neurologist and gut-brain researcher, aptly states, “The health of the brain is deeply connected to the health of the gut.”

In the battle against Alzheimer's, embracing a holistic approach that includes nutraceuticals, probiotics, and lifestyle modifications may pave the way for a future where cognitive decline is no longer an inevitable consequence of aging. The quest for a cure continues, but nature might already hold the answers we seek.

Formulations and quality: Key for effective nutraceuticals

Sharad Jaiswal, Founder and CEO, Purobest stresses that the effectiveness of nutraceuticals is often compromised by poor formulations and inadequate dosages, leading to skepticism and consumer distrust especially in India, where quality testing remains largely unregulated

In an ideal world, a well-balanced diet would provide all the nutrients our bodies need to function optimally. But in reality, factors like soil depletion, heavily processed foods, and modern lifestyles have made it difficult to get the necessary vitamins, minerals, and bioactive compounds from food alone. This is where nutraceuticals step in, offering a science-backed approach to filling these nutritional gaps. However, the effectiveness of nutraceuticals is often compromised by poor formulations and inadequate dosages, leading to skepticism and consumer distrust especially in India, where quality testing remains largely unregulated.

Unlike generic supplements that provide suboptimal amounts of key nutrients, true nutraceuticals are designed to deliver therapeutic benefits. Take Acetyl-11-keto- β -boswellic acid (AKBA), a potent extract from *Boswellia Serrata* that has been clinically studied for its anti-inflammatory properties. While many supplements contain only trace amounts of AKBA, a well-formulated nutraceutical ensures a standardised, high-potency extract that delivers real results. Similarly, Genistein, a powerful phytoestrogen found in soy, is widely studied for its



hormonal balance and bone health benefits, yet its effectiveness depends on purity and bioavailability. Without proper formulation, these compounds fail to make a meaningful impact on health.

The same holds true for curcumin, the active compound in turmeric, which is widely recognised for its anti-inflammatory and antioxidant properties. However, raw turmeric contains less than five per cent bioavailable curcumin, making it ineffective in small doses. A scientifically formulated bioavailable curcumin extract ensures the body absorbs it efficiently, maximising its health benefits. Without this level of formulation, turmeric supplements often fail to provide any real therapeutic effect.

A major challenge in India's nutraceutical market is the lack of rigorous quality control. Many products are either under-dosed, contaminated with fillers, or lack the potency claimed on the label. Unlike pharmaceutical drugs, which undergo strict clinical trials, most nutraceuticals in India are not subject to the same level of scrutiny. This leads to mistrust among consumers, who often question whether the supplements they purchase actually work.

In an era where preventive healthcare is becoming a necessity, nutraceuticals have the potential to transform lives. But for them to be truly effective, science, quality, and transparency must come first.

How Gen Y, Gen Z, and AI are driving Mission \$100 bn for India's nutra future

Vikas Bansi, Business Director-India, OTC-Himalaya Wellness; **Sailesh S**, Partner, Anthill Ventures; **Len Monheit**, CEO, Industry Transparency Center, and **Nitin Lath**, MD-Stifel Investments explains that India's nutraceutical sector is entering a high-growth phase, fueled by rising consumer demand, digital innovation, and next-gen consumer behavior. With the right strategies, the ambitious \$100 billion target by 2047 is within reach

As we sat down with industry leaders*, researchers**, and policymakers***, one thing became strikingly clear: India's nutraceutical market is on the cusp of a transformative journey. Currently valued at \$4-5 billion, this sector is expected to reach \$18 billion by 2025 (Source: Invest India). Yet, the vision for a \$100 billion market by 2047 (Source: Nutra Task Force under PSA to Government of India) is more than just a lofty goal-it's a possibility rooted in opportunity, ambition, and innovation.

The question, however, is whether India can harness its potential effectively to rise to this challenge.

The current landscape

India's nutraceutical industry has been growing at a blistering pace. Bolstered by rising health awareness and increasing disposable incomes, this sector is emerging as a global contender. The dietary supplements market, valued at \$3.9 billion in 2020, is set to grow at a compound annual growth rate (CAGR) of 21.79 per cent, potentially touching \$22.2 billion by 2026.

According to projections by the Ministry of Food Processing Industries (MoFPI) and Invest India, the nutraceutical market could scale to \$117 billion by 2035 in ideal circumstances. But even if growth slows to an average rate of 12 per cent, the market is well on its way to crossing the \$100 billion mark by 2047. That said, achieving this milestone by 2035 would require an aggressive and focused strategy.

The roadblocks

During our discussions with stakeholders, several challenges emerged as recurring



Vikas Bansi, Business Director-India, OTC-Himalaya Wellness



Sailesh S, Partner, Anthill Ventures

themes:

- 1. Regulatory complexities:** India's regulatory framework for nutraceuticals is steadily evolving, presenting an opportunity for greater alignment between the two key regulators. Addressing this will further strengthen the industry's foundation and support its growth potential.
- 2. Quality assurance:** Consistency in quality remains a major hurdle. Without stringent checks, the risk of subpar products entering the market can erode consumer trust.
- 3. Research and development:** India's nutraceutical industry has yet to fully tap into its rich biodiversity. Limited investment in R&D is a bottleneck for creating high-value, science-backed products.
- 4. Infrastructure challenges:** Fragmented supply chains and inadequate storage facilities, especially for perishable ingredients, add inefficiencies to the system.

Unlocking growth

To get to \$100 billion by 2047 (Source: Nutra task force : Under the PSA to government of India), India must address these challenges head-on. Here's how:

- 1. Streamlined regulations:** Harmonizing policies with global standards, can enhance India's competitiveness on the world stage.
- 2. Public-private partnerships (PPPs):** Collaboration between government bodies, academia, and private players can accelerate R&D, create infrastructure, and foster innovation.
- 3. Leverage indigenous knowledge:** With its unparalleled biodiversity and heritage in Ayurveda, India has the tools to lead in plant-based nutraceuticals-if utilised effectively.
- 4. Infrastructure overhaul:** Investments in supply chains and cold storage can significantly reduce wastage and improve operational efficiency.
- 5. Active AI implementation across the**

supply chain: Embracing AI-driven solutions across the supply chain can optimise every stage of the process, from procurement to distribution. NutriflyGenie AI has already established success stories with Indian Contract Development and Manufacturing Organizations (CDMOs) and ingredient suppliers, leveraging international opportunities while addressing the vast potential of the Indian market.

6. The role of Gen Y and Gen Z: A major impetus for growth is being driven by Gen Y and Gen Z, who are far more informed and demand evidence-based claims. These younger generations look for doctor endorsements and reliable product validation. While social media serves as a good awareness tool, it is increasingly being viewed as a "health-washing" platform, with limited trust but substantial informational value. Their preferences are shaping market trends, with the highest growth seen in conventional formats like capsules, gummies, and powders.

A recent survey of 600 Gen Y and Gen Z consumers by Nutrifly Today revealed that fitness and skin wellness dominate as high-priority choices, with 80 per cent selecting these categories. Interestingly, 60 per cent also expressed an interest in wellness solutions for anxiety and sleep—areas traditionally associated with older demographics. Additionally, 68 per cent reported awareness and use of supplements for cardiovascular health, a trend likely influenced by frequent news of young individuals experiencing heart attacks. These findings underscore the defining role these generations will play in the next 20 years of the Indian nutraceutical story.

7. Investments and industry evolution: Over the last three years, India has witnessed nearly 30 major mergers, acquisitions, and investments in the nutraceutical space, marking a high-intensity growth phase. The country is at a crossroads similar to where the US stood in the early 2000s, when the American nutraceutical market, valued at \$15 billion, entered a period of exponential growth. India's journey has already begun, but there's much to learn from the US experience—particularly the importance of evidence-driven, responsibly developed products and supply chains that extend to sustainable farming practices.

8. Positioning as a global leader: With the advent of advanced AI tools like NutriflyGenie AI, the nutraceutical industry is



Len Monheit, CEO, Industry Transparency Center

achieving unprecedented efficiency. These tools have streamlined the entire process, from ideation to commercialisation, enabling companies to develop evidence-backed, high-science products. What once took two years to bring to market can now be accomplished in significantly less time, with the added advantage of unique positioning. This technological leap gives Indian companies a significant edge in capturing both domestic and international markets.

India has a unique opportunity to emerge as a global guidepost for responsible nutraceuticals. This approach could not only help achieve the \$100 billion target but also set new standards for regulatory and self-governance practices. Leveraging its adjacency to the pharmaceutical sector, where India already has a strong global footprint, the nutraceutical industry can naturally adopt best practices and elevate its credibility worldwide.

Charting the path forward

To achieve this audacious goal, India needs a multi-dimensional approach:

- ◆ **Policy advocacy:** Incentivising R&D, introducing export-friendly policies, and offering tax breaks for startups in the nutraceutical space.
- ◆ **Global collaborations:** Partnering with international firms to exchange technologies and penetrate global markets.
- ◆ **Technological integration:** Using AI and machine learning for advanced market analysis, product development, and personalized consumer engagement.
- ◆ **Sustainability focus:** Adopting green



Nitin Lath, MD-Stifel Investments

manufacturing practices to align with global sustainability norms and attract eco-conscious consumers.

Conclusion

Sitting at the intersection of global demand and untapped potential, India's nutraceutical market is on the brink of extraordinary growth. The \$100 billion milestone by 2047 is achievable, but it will require collective action from every stakeholder—government, industry, and consumers alike.

India has the resources, the talent, and the ambition. Now, it's about executing a well-thought-out strategy to transform potential into reality. As I reflect on the insights shared during my conversations, one thing is evident: the journey to a \$100 billion market isn't just about numbers—it's about reshaping the health and wellness narrative for billions of people, both in India and beyond.

, **, * Disclaimer:*

The insights presented in this draft are based on discussions with industry leaders, researchers, and policymakers. To respect the confidentiality of these conversations, individual names and specific details have not been disclosed. The views expressed reflect general industry trends and opportunities and are intended for informational purposes only.

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Prioritise nutrition for leprosy elimination

Nikita Sarah, Head – Advocacy & Communications, and **Subhojit Goswami**, Senior Program Manager – Advocacy & Communications, The Leprosy Mission Trust India, emphasise that just like tuberculosis (TB), the leprosy programme needs to push for nutritional support for patients and their household contacts to reduce the risk of transmission and disability

A research published in the March edition of the *Lancet Global Health* (1) made an important claim: providing nutritional support intervention could prevent 3,61,200 tuberculosis deaths and 8,80,700 disease episodes from 2023 to 2035. According to Dr Soumya Swaminathan, the Principal Adviser to the National Tuberculosis Elimination Programme and former Chief Scientist at WHO, “nutrition almost acts like a vaccine, and better than the existing BCG vaccine.” Nutrition, according to her, could be an approach in India and other countries where malnutrition is a risk factor for TB. India reports close to 30,00,000 cases of TB each year, which is more than 25 per cent of the global tuberculosis cases every year.

In 2018, the Ministry of Health and Family Welfare (MoH&FW) launched Ni-Kshay Poshan Yojana (NPY) to provide nutritional support to TB patients during their treatment. It turned out to be a good incentive for the at-risk population to report voluntarily and early, because only registered patients are eligible for this monthly financial assistance. In a country like India, where about 40 per cent of TB cases happen due to underlying malnutrition, and early identification of people with active TB is crucial for breaking the chain of disease transmission, this policy decision is a wonder pill!

In October 2024, the MoH&FW doubled the monthly nutrition support under NPY from INR 500 to INR 1,000 per patient for the entire duration of the treatment. It also decided to introduce energy dense nutrition supplementation (EDNS) for all patients with BMI < 18.5 and expand the scope of nutritional support to household contacts of TB patients.

Challenges in TB and leprosy: drawing parallels

Just like TB, India reports the highest incidence of leprosy in the world (2), contributing more than 50 per cent of global cases each year. Leprosy is a bacterial infection which is



Nikita Sarah



Subhojit Goswami

also the leading cause of disability among communicable diseases. According to studies, “often undiagnosed nutritional deficiencies result in heightened disease severity.” They also suggest that nutrient deficiencies weaken the immune system, leading to a diminished host immune response to pathogens like bacteria. Despite having access to therapy, patients continue to experience poor quality of life in the absence of dietary interventions.

A recent study by The Leprosy Mission Trust India (3) demonstrated that areas having high leprosy prevalence invariably have high levels of nutrition deficits. Seven states in India—Bihar, Chhattisgarh, Jharkhand, Maharashtra, Odisha, Uttar Pradesh and West Bengal—contribute more than 75 per cent of leprosy cases each year and over 50 per cent of child leprosy cases—an indicator of active community transmission of the disease. It is not surprising that these are the same states that contribute more than 50 per cent of India’s TB cases.

Most of these states have high levels of multidimensional poverty—multiple and simultaneous deprivations of health, nutrition, clean water, electricity, livelihood, education, etc. For example, the Ministry of Women and Child Development (4) data suggests that more than 50 per cent of children under 5

years are stunted in the districts of Sitamarhi (Bihar), Bijapur (Chhattisgarh) and Bahraich (Uttar Pradesh). In Maharashtra, the tribal districts of Dhule and Nandurbar have a high percentage of children under 5 years who are wasted and underweight. Leprosy incidences are high in these districts. In short, children and adults in these districts are susceptible to contracting leprosy.

Disease programme integration: win-win for public health

What does the population at risk of contracting leprosy need? A 2022 study (5) published in the National Library of Medicine demonstrated that “supplementation of vitamins A, C, D, E and B12 and minerals zinc, magnesium and selenium in leprosy cohorts, where nutrient deficiency is common, enhance the antioxidant response (a mechanism to protect cells from damage) and decrease morbidity overall”. These supplements strengthen the immune system and mitigate potential adverse effects in leprosy. Reduced leprosy complications will lead to a dip in leprosy-related disability, which, in turn, will reduce the economic burden that comes along with it.

We see a great opportunity to extend the coverage of NPY to leprosy patients as well. It will be a disease programme integration in the

truest sense. The TB division already has the machinery up and running for providing nutrition support to about 30 lakh patients. The potential benefits of extending this service to around 100,000 leprosy patients and their household contacts are immense. It is now imperative that the MoH&FW act decisively to integrate leprosy patients into the Ni-Kshay Poshan Yojana. Addressing the issue of undernutrition in a synergistic way will not only bring India closer to its TB and leprosy elimination targets but also create a healthier future for millions.

References:

1. [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(24\)00505-9/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(24)00505-9/fulltext)
2. <https://www.who.int/data/gho/data/indicators/indicator-details/GHO/number-of-new-leprosy-cases>
3. <https://www.leprosymission.in/resources/climate-change/>
4. <https://pib.gov.in/PressReleasePage.aspx?PRID=1806601>
5. <https://pmc.ncbi.nlm.nih.gov/articles/PMC9168857/>

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Virosil Pharma: A Swiss eco-friendly disinfectant

Virosil Pharma effectively protects critical surfaces that come in contact with pharma products

Sanosil Biotech, a Mumbai-based company is the first company to pioneer the novel concept of eco-friendly fumigation in sterile areas completely replacing the use of carcinogenic proven formalin. The product Virosil Pharma is based on Hydrogen Peroxide (H₂O₂) with Silver ions. The combination of these two ingredients gives a synergistic broad spectrum of activity on all kinds of viruses, bacteria, fungi, yeasts, molds, protozoa and algae. It is a clear, colourless, odourless, tasteless disinfectant which is non-carcinogenic, non-mutagenic, revolutionary and can be used where other chlorine based disinfectants have been feared.

Virosil Pharma is presently being used in organisations and institutions such as Pfizer, Cipla, Dabur, Ranbaxy, J&J, Abbott, Serum Institute, Dr Reddy's, Lupin Labs, Cadila Healthcare, Wockhardt, Biocon, Astrazeneca, Reliance Life Sciences, etc., as a very effective fumigant and disinfectant providing an environment with microbial containment and a completely safe and sterile environment

Virosil Pharma effectively protects critical surfaces that come in contact with pharma products. Manufacturing, filling, packing and storage areas; Instruments, equipment, water tanks and pipelines – can now be pathogen free.

What's more, there's no need to re-wash disinfected surfaces or instruments since H₂O₂-based Virosil Pharma safely decomposes into water and oxygen.

The formulation has been tested in various reputed institutions in Switzerland, France, Germany, Australia and India.

MIC determination - Method based on

How effective is it?

Even at low dosages, Virosil Pharma has the power of penetrating bio-film and killing the actual bacteria, thereby providing a long residual level of disinfection

How safe is it ?

It cannot pollute waste water, because it breaks down into water and oxygen, i.e. it produces no noxious by-products.

VIROSIL PHARMA
For bacteria- free surface & Pipelines

How does it compare to chlorine?

Virosil Pharma is superior to chlorine since it imparts no taste or odour to the water and is highly effective at both hot and cold temperatures

How does it work ?

H₂O₂ is a strong oxidising agent (more powerful than chlorine or chlorine dioxide). The oxygen separated from H₂O₂ destroys the biofilm, enabling the silver to help destroy any bacteria or virus.



also maintains a long residual level of disinfection in water tanks and pipelines.

Using Virosil Pharma overcomes the disruption problem because it is absolutely safe to leave it in the water. Better still, the longer it's in the water, the better the results since it will attack the biofilms which harbour most of the bacteria populations.

The company also offers a customised disinfection audit on its website; www.sanosilbiotech.com

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modified BSEN13704 (sporicidal)
Test Organisms: 1) Bacillus subtilis ATCC 6633

Disinfecting biofilms using Virosil Pharma

Virosil Pharma not only successfully penetrates bio-films and eliminates bacteria but

RESULTS TABLE2- Microbial Counts Post Disinfectant Exposure in CFU/ml

	Microbial Counts in CFU/ml			Microbial Counts in Log Values			Log Reductions			Log Reductions		
	Virosil 10%			Virosil 10%			Virosil 10%			Virosil 10%		
	5 mins	30 mins	60 mins	5 mins	30 mins	60 mins	5 mins	30 mins	60 mins	5 mins	30 mins	60 mins
B subtilis	4900	2300	310	4.7411	5.0696	5.9400	3.6901	3.36178	2.4913	99.9981	99.9991	99.9998



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- Sodium Carboxy Methyl Cellulose
- Hydroxy Propyl Methyl Cellulose (HPMC)
- Low Substituted Hydroxy Propyl Cellulose (L-HPC)



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