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Vitafoods India 2025 set to propel nutraceutical industry growth and sustainability

OUR BUREAU, MUMBAI

INDIA'S leading B2B events organiser, Informa Markets in India, is set to host the third edition of Vitafoods India from 5th to 7th February 2025 at Pavilion 1-2, Jio World Convention Center, Mumbai. The event will bring together leaders, influencers, and decision-makers from the nutraceutical, functional food, and dietary

supplement industries, showcasing a dynamic representation of the sector.

With India's nutraceutical market projected to grow from USD 4 billion in 2020 to USD 18 billion by 2025, with a CAGR of 13.6% expected from 2025 to 2030, the event will serve as a hub for distributors, procurement managers, product development experts, regulatory affairs professionals, and R&D specialists.

This year, Vitafoods India will host 136 domestic and 23 international exhibitors, along with over 19 educational sessions with more than 35 expert speakers who will share insights into the industry's future. The event is expected to attract over 8,000 visitors, reinforcing its role as a premier networking and knowledge-sharing platform for the nutraceutical ecosystem.

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Sustainability, Technology and Innovation Transforming the Indian Nutraceutical Industry



DR. SANJAY AGRAWAL

THE Indian nutraceutical industry, a key player in the global wellness economy, is undergoing a revolutionary transformation. This transformation is characterized by a dynamic interplay of sustainability, cutting-edge technology, and relentless innovation, positioning the sector as a frontrunner in addressing the increasing global demand for health-conscious solutions. Over the past few years, there has been a paradigm shift in consumer preferences, with individuals seeking products that align with their health and wellness goals. The growing emphasis on preventive healthcare, coupled with a preference for natural, plant-based products, is reshaping the industry's trajectory.

India, with its rich heritage of traditional medicine systems like Ayurveda and a rapidly evolving modern scientific ecosystem, is uniquely poised to cater to these demands. The convergence of tradition and technology is enabling Indian nutraceutical companies to create solutions that are not only effective but also affordable for the global market. Moreover, the country's diverse agricultural landscape provides access to a wide variety of raw materials essential for nutraceutical production, such as turmeric, ashwagandha, and moringa. This inherent advantage, when combined with sustainable practices and advanced technologies, is helping India emerge as a global hub for innovative nutraceutical solutions.

The Rise of the Indian Nutraceutical Industry

India's nutraceutical market, valued at approximately USD 8 billion in 2022, is projected to grow at a compound annual growth rate (CAGR) of

over 15% through 2030. This impressive growth trajectory is underpinned by a multitude of factors, including increasing disposable income, heightened awareness about the importance of preventive health, and the rising prevalence of lifestyle-related health issues such as diabetes, obesity, and cardiovascular diseases. These factors are reshaping consumer behavior, driving a surge in demand for functional foods, dietary supplements, and other nutraceutical products.

The COVID-19 pandemic acted as a catalyst, amplifying the global focus on health and immunity. Products designed to boost immunity, such as those containing Vitamin C, zinc, and herbal ingredients like giloy and tulsi, saw an unprecedented rise in demand. This shift has provided the Indian nutraceutical industry with an opportunity to innovate and expand its portfolio to cater to a health-conscious population not just domestically, but internationally as well.

Furthermore, the rise of India's middle class, which is expected to constitute a significant portion of the global middle-class population by 2030, is playing a pivotal role in driving this growth. With increasing purchasing power, this demographic is investing in high-quality nutraceutical products that promise long-term health benefits. India's robust tradition of Ayurveda and natural remedies has further solidified its position in the global nutraceutical landscape, offering a unique blend of time-tested wisdom and scientific validation.

However, this rapid growth is not without challenges. The industry must navigate issues such as regulatory complexities, ensuring consistent quality, and fostering sustainable practices to ensure long-term viability. To address these challenges, there is an urgent need for collaboration between stakeholders, including government bodies, industry leaders, and research institutions, to create a supportive ecosystem for sustained growth.

Sustainability: The Core of Future Growth

Sustainability is no longer a buzzword; it is a necessity. The Indian nutraceutical industry recognizes this and is integrating sustainable practices across the value chain, from sourcing raw materials to packaging.

1. Sustainable Sourcing

India's biodiversity offers a treasure trove of raw materials like turmeric, ashwagandha, and moringa. However, overharvesting and unethical practices can deplete these resources. Companies are adopting sustainable sourcing methods, including:

- Partnering with local farmers for organic and ethical cultivation.
- Implementing fair trade practices to ensure farmers benefit economically.
- Leveraging advanced agricultural techniques like vertical farming and hydroponics to reduce land and water usage.

2. Eco-Friendly Manufacturing

Manufacturing nutraceuticals sustainably involves minimizing waste, conserving energy, and reducing emissions. Indian firms are increasingly:

- Using renewable energy sources like solar and wind in production facilities.
- Recycling waste products into animal feed or bioenergy.
- Adopting cleaner production technologies to minimize their carbon footprint.

3. Sustainable Packaging

Consumer awareness about plastic waste has pushed companies to adopt biodegradable and recyclable packaging solutions. Innovations such as edible packaging and plant-based plastics are gaining traction in the nutraceutical sector.

Technology: Driving Precision and Efficiency

Technological advancements are transforming the nutraceutical industry, enabling companies to create highly efficient, safe, and targeted solutions.

1. AI and Machine Learning for R&D

Artificial intelligence (AI) and machine learning (ML) are streamlining the research and development of nutraceuticals. These technologies allow for:

- Predictive analysis to identify new compounds and their potential health benefits.
- Accelerated testing of product efficacy and safety.
- Customized solutions tailored to individual health profiles, paving

the way for personalized nutrition.

2. Biotechnology for Enhanced Formulations

Biotechnology is revolutionizing the production of nutraceutical ingredients. By using microbial fermentation, scientists can produce bioactive compounds like probiotics, enzymes, and vitamins more efficiently. This not only enhances the potency of these products but also makes them more sustainable by reducing reliance on traditional agricultural methods.

3. Blockchain for Transparency

Blockchain technology is addressing the growing consumer demand for transparency. By leveraging blockchain, companies can provide:

- Traceability of ingredients from farm to shelf.
- Assurance of product authenticity and quality.
- Real-time data on production processes to enhance trust.

4. Smart Manufacturing

Industry 4.0 technologies such as the Internet of Things (IoT) and robotics are optimizing manufacturing processes. These innovations:

- Reduce operational costs and enhance efficiency.
- Enable real-time monitoring of production lines to ensure quality consistency.
- Minimize waste by optimizing resource utilization.

Innovation: Meeting Consumer Needs

The nutraceutical industry thrives on its ability to innovate and cater to evolving consumer demands. Recent trends showcase how Indian companies are redefining the landscape.

1. Plant-Based and Vegan Products

With the global shift toward plant-based diets, Indian nutraceutical companies are developing vegan-friendly supplements. Ingredients like pea protein, spirulina, and plant-based omega-3 are gaining popularity as alternatives to animal-derived products.

2. Immunity-Boosting Supplements

Post-pandemic, the demand for immunity-boosting products has surged. Ingredients like turmeric, giloy, and ashwagandha, long celebrated in traditional medicine, are being incorpo-

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Significance of Pharmacokinetic Studies...

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4. Ethical and Regulatory Challenges: PK studies on human subjects can be expensive and have many regulatory constraints.

Case Studies

1. Curcumin

Curcumin, the active constituent in turmeric, is poorly orally available because it is rapidly metabolized and excreted. PK studies have evolved curcumin nanoparticles and liposomal curcumin to improve its absorption manifold.

2. Probiotics

These include PK studies done on probiotics such as Lactobacillus and Bifidobacterium, which indicate that these probiotics survive stomach acidity and get established in the gut. Such findings underpin certain health claims for improved digestion and immunity.

3. Omega-3 Fatty Acids

PK studies have shown that bioavailability of omega-3 fatty acids is higher when it is given in the form of triglycerides instead of ethyl ester. This knowledge has influenced the formulation of a better supplement of omega-3 fatty acids.

4. Silymarin from Milk Thistle:

Investigations established that silymarin pharmacokinetics are significantly dose- and formulation-dependent. The recognition of these dependencies enables optimal dosing recommendations for therapeutic effectiveness on the liver.

5. Botanical Supplements in Older Adults:

A botanical dietary supplement study focused on the need for rigorous PK data to ensure safety and efficacy among older adults who often take multiple medications. The findings underscored how PK research could inform clinical guidelines for safe supplementation.

Future Recommendations

In order to increase the depth of knowledge of pharmacokinetics of dietary supplements, a few steps may be taken:

Increase funding to the research area: Further funding in pharmacokinetic studies of the diverse dietary supplement should be arranged.

Use of advanced technologies: New technologies like metabolomics can give more insights into how dietary supplements affect metabolic pathways in individuals.

Collaboration among stakeholders: Researchers, regulatory agencies, healthcare providers, and manufacturers should collaborate to set guidelines on how PK studies should be conducted in a manner that is consistent and reliable.

Author Notation :-

“Pharmacokinetics is highly instrumental to validate the efficacy of nutraceutical ingredients, where the

industries should collaborate with academia to culminate on physiological and therapeutic benefit and absorption timeline and pathways.”

Conclusion

Pharmacokinetic studies are essential determinants for establishing efficacy, efficiency, and safety of dietary supplements. Optimizing formulations, providing a scientific basis for health claims, and guaranteeing safety are essential in building consumer trust and supporting compliance with regulatory requirements. As the dietary supplement industry continues to grow, robust PK research will be crucial for delivery of high quality, effective products that meet the health needs of consumers.

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rated into modern formulations to create potent supplements.

3. Personalized Nutrition

Innovation in nutrigenomics- the study of how food affects gene expression- is enabling personalized nutrition solutions. Indian companies are exploring this frontier by:

- Offering DNA-based health assessments.
- Designing supplements tailored to individual genetic profiles.
- Encouraging proactive health management through customized diets.

4. Functional Foods and Beverages

Functional foods, which combine nutrition with therapeutic benefits, are gaining momentum. Products like fortified cereals, protein bars, and probiotic beverages are being tailored to cater to specific health needs such as weight management, digestive health, and energy boosting.

5. Hybrid Products

Hybrid products that combine nutraceuticals with pharmaceuticals are emerging as a new category. These products, which deliver both preventive and therapeutic benefits, are especially appealing to health-conscious consum-

ers looking for holistic solutions.

Government Initiatives and Policy Support

The Indian government has recognized the potential of the nutraceutical industry and is actively promoting its growth. Initiatives like “Make in India” and “Aatmanirbhar Bharat” are encouraging local production and innovation. Regulatory bodies such as the Food Safety and Standards Authority of India (FSSAI) are streamlining guidelines to ensure product safety and quality while promoting exports.

Moreover, the government’s focus on biotechnology and agricultural innovation is supporting the development of high-quality raw materials, while tax incentives for R&D are fostering a culture of innovation.

Challenges and the Road Ahead

Despite its rapid growth, the Indian nutraceutical industry faces several challenges, including:

- Limited consumer awareness in rural areas.
- Regulatory hurdles and the need for harmonized global standards.
- High costs of R&D and advanced technologies.

Addressing these challenges requires a collaborative approach involving

government bodies, private players, and research institutions. By focusing on education, standardization, and investment in innovation, India can solidify its position as a global leader in nutraceuticals.

Conclusion

Sustainability, technology, and innovation are redefining the Indian nutraceutical industry, enabling it to meet the demands of a health-conscious global audience. By embracing eco-friendly practices, leveraging cutting-edge technologies, and continuously innovating, India is setting new benchmarks in the sector. The fusion of traditional Ayurvedic principles with modern scientific advancements has placed the country at the forefront of nutraceutical innovation, allowing it to cater to evolving consumer needs.

As consumer preferences evolve and global challenges like climate change and health pandemics persist, the industry’s ability to adapt will determine its future success. Emerging trends such as personalized nutrition, AI-driven product development, and blockchain for supply chain transparency are expected to shape the next decade of growth. Additionally, the increasing adoption of plant-based and vegan nutraceuticals aligns with

the global shift towards sustainability, opening new avenues for Indian manufacturers.

The integration of artificial intelligence and machine learning is further accelerating product development, allowing companies to analyze consumer data and create targeted solutions. Technologies like precision fermentation and biotechnological innovations are also poised to transform the industry, enabling the creation of high-quality, sustainable ingredients at scale. Moreover, the focus on reducing the carbon footprint of production processes is driving the adoption of renewable energy and eco-friendly packaging.

With its unique blend of traditional wisdom and modern science, India is well-equipped to lead the next wave of transformation in the global nutraceutical landscape. By prioritizing sustainability, investing in technology, and fostering a culture of innovation, the Indian nutraceutical industry is not just growing- it is thriving. The road ahead is filled with opportunities, and with the right strategies, India is set to solidify its position as a global leader in the nutraceutical sector.

(The author is Scientific Advisor of ALKOMEX GBN PHARMA GROUP U.S.A.)