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Balancing Taste, Nutrition and Functionality in Next-Generation Flavour Solutions

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Consumer expectations around flavour are evolving, with growing interest in regional profiles, reduced-sugar products, added-protein formulations and more distinctive sensory experiences. At the same time, food and beverage manufacturers face the challenge of balancing taste, nutritional positioning, clean-label expectations, product stability and cost. This is making application-specific research and development increasingly important, while technologies such as AI and data analytics are opening new possibilities for flavour discovery, formulation and consumer insight.

In this interview with NUFFOODS Spectrum, Aditya Vaze, Promoter & Technology Officer, AARAV Fragrances & Flavors, discusses how changing consumer preferences are shaping flavour innovation and the role of science, R&D and technology in developing differentiated solutions. He also shares his perspective on the practical application of AI in flavour

development, opportunities for Indian companies to strengthen their global competitiveness, and the specialty ingredient trends expected to influence the industry over the next three to five years.

How are changing consumer preferences shaping flavor development and sensory experiences? Which trends are having the greatest influence?

Consumers are becoming more adventurous, but they are also more demanding about value and nutrition. A product cannot rely on novelty alone; it must taste good consistently and justify its place in a consumer's routine. We see interest in regional Indian profiles, familiar flavours presented in new formats, and products with reduced sugar or added protein. Those changes create interesting technical challenges, because reformulation often affects taste, texture and the overall experience. At AARAV, we believe the opportunity is to understand the finished product, not simply supply an attractive flavour. A great flavour on a tasting strip is not necessarily a great flavour in a beverage, snack or dairy application.

What role are ingredients, science and R&D playing in differentiated flavor solutions? How is the industry balancing sensory performance with clean label, natural, health and functionality?

Science is increasingly central to flavour development because the most valuable work is often application-specific. The same flavour can behave very differently depending on the product matrix, processing conditions, packaging and shelf life. Naturalness and clean-label positioning matter to many brands, but neither automatically guarantees superior taste, stability or safety. The real job is to make informed trade-offs among sensory quality, regulatory requirements, cost and performance. Advances in analytical methods, delivery systems and ingredient processing give the industry more options than before. The differentiator, however, remains the ability to translate those options into a formulation that works reliably at commercial scale. That's where experienced flavourists, application scientists and manufacturing teams have to work together.

How are AI, data analytics and other technologies changing flavor and sensory innovation? Examples for discovery, consumer insights, formulation and predicting preferences?

I see AI as a useful tool rather than a substitute for flavourists or consumer research. It is already valuable for organising market information, identifying patterns in consumer feedback and making technical knowledge easier to access. Over time, better formulation and sensory datasets should also help teams narrow down experimental options. But predictive flavour design is a difficult problem: sensory perception is complex, data quality varies, and ingredients behave differently in different product matrices. We should be sceptical of claims that an algorithm can simply predict what consumers will love. At AARAV, our focus is on using data and technology pragmatically to improve the speed and quality of development decisions while retaining human sensory judgement.

How do perfumers, flavorists, food scientists and R&D teams work together to turn creative concepts and consumer insights into commercially viable products?

Good development depends on productive disagreement between creative and technical teams. A flavourist may have a compelling sensory concept; an application scientist must then establish whether it survives processing and storage; and the commercial team has to ensure that the solution makes sense at the customer's price point. These constraints should enter the conversation early rather than after a formulation has already been perfected. AARAV's experience across both fragrances and flavours also gives us different ways of thinking about how an aroma opens, develops and lingers. Ultimately, successful innovation is not the most impressive sample in the laboratory. It is the product that performs consistently in the customer's application and wins repeat purchases.

What opportunities do you see for Indian companies to build globally competitive capabilities across flavors, ingredients and sensory innovation, and what gaps remain?

India already has strong capabilities in chemistry, manufacturing and natural raw materials. The opportunity now is to convert those strengths into differentiated, globally competitive products. That requires more than low production costs: customers value consistency, technical service, reliable supply and an understanding of their applications. Indian companies can be particularly competitive where they combine knowledge of local materials and tastes with international quality expectations. I also see significant longer-term potential in biotechnology and advanced ingredient processing, although commercial success will depend on economics and scale, not technology alone. Our industry should invest more in scientific talent, applied research and collaboration with customers. Competing internationally on innovation is a much more demanding ambition than competing on price, but it is also more durable.

How will the role of specialty ingredients and innovation evolve? Which technologies, ingredients or consumer trends will have the greatest impact over the next three to five years?

Three developments stand out to me. First, taste modulation will matter more as brands reformulate products for changing nutritional expectations. Second, biotechnology and improved processing methods may expand the range of ingredients that can be made consistently and economically, though not every technically feasible route will be commercially attractive. Third, digital tools should make the development process more disciplined by connecting consumer insight with experimental results. Sustainability and traceability will increasingly influence sourcing decisions as well. Across all of these trends, the key change is that customers are asking suppliers to solve broader formulation problems. For flavour and ingredient companies, the opportunity is to provide dependable technical capability alongside creativity rather than treating innovation as a matter of launching more variants.