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Journalist:	Sujit John	Page No:	23

Why FMCG R&D is moving to bioscience, data science & AI

Unilever's India labs are at the cutting-edge of this trend

Sujit.John@timesofindia.com

Niacinamide is a vitamin B3 based medication. It was discovered in the 1930s. Around 1970, Unilever became the first company to use niacinamide in a cream. This was in its Fair & Lovely (now called Glow & Lovely) brand. It helped address pigmentation, it gave an even tone to the skin. Unilever patented it, and the product became hugely successful. As soon as the patent expired, hundreds of brands around the world started using it. And it continues to be an integral part of many skincare brands.

Guess where that niacinamide innovation happened! In Unilever's Mumbai lab. "We were the first ones to combine niacinamide with UV sunscreens. Even today this is one of the hottest molecules in sk-

"India is our second largest R&D hub. Our teams here are powering innovation for our brands around the world. There are two major global trends for us in R&D - we are moving from chemistry dominated to biosciences, and we're moving from the lab being our first point of call to digital ways of doing research. India is at the cutting-edge of both of these. We have a bioscience and a microbiome team based in Bengaluru and they are finding out amazing things about how the microbiome can bring benefits and performance.

-Richard Slater



Richard Slater, chief research & development officer, Unilever, and Vibhav R Sanzgiri, executive Director, R&D, Hindustan Unilever (third from right in front row), with scientists at Unilever's Bengaluru R&D facility

"In the past, we would come in our lab coats, run many, many experiments, try an ingredient here, a level here, test the stability of the product, test it on a line. You can imagine the time and resources it takes. Now, an enormous amount of that is done with predictive modeling. Then we hone it down to the final few prototypes very quickly. And then we just test those. We're partnering with the likes of Microsoft, Siemens, Google to develop these models and apply AI to find new insights, and also to speed up our products to market. Often we can predict what customers will like, what will drive performance of products.

-Richard Slater

incare," says Vibhav R Sanzgiri, executive director of R&D at Hindustan Unilever.

That Mumbai lab, and the ones Unilever have in Bengaluru and Gurgaon, have today made India the British FMCG company's second largest R&D hub. More than 800 of its 5,000 scientists sit here. And these scientists are at the forefront of Unilever's most cutting-edge work, especially as it now shifts from chemistry-based work to more sustainable bioscience-based research, and as it uses digital methods to fast-track both research and its go-to-market.

"So much of the work that our teams do here is powering innovation across our brands globally, as well as here in HUL," Richard Slater, chief research & development officer at Unilever, says.

India innovations for the world

We met Richard recently on one of his visits to India during which he elaborated on a number of innovations from the India labs that are having far-reaching impact.

One of these has gone into the liquid Lux sold in China. "This is a fragrance that we've proven clinically - using digital mapping of the brain - that it instantly boosts confidence and mood, believe it or not. This is at the cutting-edge of innovation," he says.

Vibhav calls it one of their biggest inventions. This was done about a year and a half back.

Another major recent innovation is around bringing skincare benefits to cleansing bars like Lux and Lifebuoy. "So, they don't just clean, they also bring an even tone on the skin, glow - things which

you normally associate with a premium skin cream. We've done an enormous amount of consumer testing worldwide with this technology that was invented here in our labs - some 80,000 consumers. And we're seeing absolutely amazing results for liking, fragrance, clinical benefits on tone and glow," Richard says.

Scientists here recently combined bioscience and materials science to launch what Richard describes as their best ever Surf Excel - a product that gives higher performance with less chemicals, and much better fragrance. Fragrance, Richard says, is a very important factor now for consumers, and a great deal of investment now goes into that, including to get top-class perfumers.

Bioscience and fragrance are also part of a new floor cleaner that Richard and Vibhav say takes hygiene to a new level. Vibhav says they used next-generation surface modifying polymers from biological sources. "They help to continuously work in terms of cleaning your surface, so they have a long-lasting effect. We tested it on toilets on Vande Bharat trains by installing malodour detectors, and the railway authorities were blown away by it," he says.

"There are billions of microorganisms that live on your skin and inside your body. They protect you from pathogens, produce certain kinds of vitamins, they help in the digestion of food, they produce underarm odour, they're involved in producing acne. The first part of our microbiome work involved understanding which of these bugs are really good for you and how do we preserve them. The second was to understand how your skin responds to them and use them to make your skin much more powerful. So we launched for the first time - and this work was done here in India - a product that improved skin immunity, by producing antimicrobial peptides that work against bad bugs without impacting the good bugs. We are also now putting some of the good bugs to use in the home, like eating up the bad bugs to give you long lasting hygiene.

-Vibhav R Sanzgiri

Digital's becoming heart of R&D

Digital capabilities is the other big new investment that Unilever is making in its India labs. "We have far more data scientists today. We have one of our biggest hubs for digital R&D in Bengaluru. These teams are becoming the heart of R&D. We have fully digitally integrated laboratories, pilot plants, manufacturing centres. So we can monitor what's going on in the factories. We also have smaller-scale versions of what we have in our factories here, and it's digitally twinned. So when we're trying to introduce a new technology or innovation, instead of going and running thousands of trials everywhere, we predict and mimic those conditions, we optimise the processing and then we go very quickly into our rollout and make sure it's high quality from the start," Richard says.