

Science Talk

How Singapore is serving up sustainable future-ready foods

It is investing in R&D and working with tech start-ups to turn innovative ideas into reality



Ng Huck Hui

About a year ago, I sampled an ice cream that contained no animal milk, but used dairy proteins brewed from microflora, a type of microorganism.

And it was surprisingly pleasing to the palate, with the same creamy texture as traditional ice cream made with cow's milk.

In fact, if I had been asked to take a blind taste test, I might not have been able to tell the two apart.

This was not by chance; it was made possible through research and development (R&D).

By tapping research expertise in analytics, taste analysis as well as capabilities in the study of proteins from the Agency for Science, Technology and Research (A*Star), American food technology start-up and A*Star industry partner Perfect Day was able to formulate alternative products that offer the same taste and texture as traditional dairy

products.

The ice cream by Perfect Day offers more than just a cool treat.

Like other up-and-coming food tech products, it has great potential to be more environmentally sustainable, requiring a smaller resource use footprint than animal-sourced food.

The demand for such animal-free protein alternatives is growing.

A report by Boston Consulting Group and investment firm Blue Horizon Corporation in March last year noted that the market for alternative meat, eggs, dairy and seafood products is set to reach at least US\$290 billion (S\$392 billion) by 2035.

Yet, such alternative food products are still some way off from becoming mainstream.

What will put them on more consumer plates are greater investments into these food tech companies, alongside an enabling vibrant innovation ecosystem where they can work with other fellow start-ups, corporates and academic research partners.

All this is happening in food paradise Singapore.

Apart from Singaporeans' love of food, the country's lack of natural resources has put the nation on the

path towards becoming the food tech innovation hub of Asia.

With little land for agriculture, Singapore imports 90 per cent of its food supply – making the urban city state potentially vulnerable to external shocks and global trends that impact food supply and safety.

Global events such as Covid-19 have further reinforced the importance of food resilience.

To ensure a steady stream of food supply, Singapore has not only diversified its import sources by buying food from more than 170 countries, but also invested heavily in developing a food science and technology ecosystem.

Singapore aspires to turn its vulnerability into an asset – and an appetising one too.

Singapore's goal is to achieve "30 by 30" – to produce 30 per cent of the nation's nutritional needs locally by 2030.

To achieve this ambitious target, Singapore believes science and technology will be critical in overcoming our natural constraints.

In 2019, A*Star worked with the Singapore Food Agency (SFA) to put together the \$144 million Singapore Food Story R&D Programme to beef up the Republic's R&D capabilities across three key themes – sustainable urban food production, future foods, and food safety science and innovation.

In partnership with the R&D

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ecosystem, A*Star plays a key role in driving Singapore's R&D and innovation in food and nutrition.

In support of Singapore's national agenda towards strengthening our agri-food capabilities and sustainable food ecosystem, A*Star established the Singapore Institute of Food and Biotechnology Innovation (SIFBI) in 2020.

SIFBI brings together under one umbrella end-to-end food innovation capabilities across food process engineering, clinical nutrition and industrial biotechnology-driven manufacturing of food, feeds and high-value ingredients.

Such capabilities can help develop solutions to meet the nutritional needs and food demands of the Asian market, in a healthy and sustainable manner.

This will help accelerate the transformation of the food industry and capture new opportunities in established industries such as advanced manufacturing, biopharmaceuticals and food manufacturing.

A*Star is also doing research into Asian taste preferences, taking advantage of Singapore's multiethnic culture to develop fermentation and food process engineering technology that will create nutritious future food products with the taste, mouthfeel, aroma, juiciness and texture that suit the Asian palate.

I believe these collective efforts will firm up a solid technological foundation to support a thriving local food innovation scene.

Today, Singapore is home to several leading alternative protein accelerators and numerous promising start-ups developing mostly plant- and cell-based meat and dairy alternatives.

American plant-based alternatives firm Eat Just and Swedish oat milk producer Oatly are also here.

Local alternative protein champions such as Next Gen

Foods, ShioK Meats and TurtleTree Labs have also emerged.

To better support these food tech start-ups, A*Star recently announced a partnership with Temasek to set up a Food Tech Innovation Centre, which will provide pilot scale R&D facilities to bridge the lab-to-market gap for food innovators, companies and institutes of higher learning.

In 2020, Singapore became the first country in the world to approve the commercial sale of a cultivated meat, or cultured meat product – meat developed from animal cell culture.

This is a testament of SFA's regulatory leadership and is critical in positioning Singapore at the forefront of food innovations, supported by robust regulatory science capabilities to ensure high food safety standards.

A*Star has worked with the Nanyang Technological University and SFA to launch the Future Ready Food Safety Hub (Fresh), a public-private partnership platform, early last year.

A key function of Fresh is to build food safety science R&D capabilities for novel foods, functional ingredients and new food processing techniques as well as provide consultancy to the industry.

This will support companies, including local enterprises, to develop and launch their food tech products in Singapore and beyond.

While Singapore is still at the beginning of its food innovation journey, it is off to a good start – preparing the key ingredients to be Asia's food tech innovation hub.

I look forward to the day when I can taste more sustainable and novel food products that both tickle and trick my taste buds.

stscience@sph.com.sg

• Professor Ng Huck Hui is assistant chief executive of the Biomedical Research Council at the Agency for Science, Technology and Research.