

Next generation 'cheeze'

The vegan cheese board has had a makeover. A category that was once perceived as being characterised by rubbery substitutes is today home to an array of rich, creamy and decadent products that could crumble the resistance of even the most die-hard dairy devotee. The Plant Base takes a closer look.

There is no doubt that cheese occupies a special place in the collective culinary consciousness. In the Western world, you would be hard-pressed to find a savoury dish that does not have a cheese-based, -topped or -filled iteration. Whole courses, evenings...entire establishments are dedicated to the consumption of it with wine. Carrying connotations of nostalgia, decadence and comfort, cheese is seen by many as one of life's small but reliable pleasures.

This perhaps explains why, even as the spotlight on the ethical and environmental implications of dairy has intensified, the 'cheeze' market has been slow to take off. In 2021, for example, dollar sales of cheese analogues in US retail accounted for a modest 3.9% slice of those netted by the plant-based category as a whole.

Nonetheless, there are signs that vegan cheese is gaining ground on other dairy alternatives like plant-based milk. Recent years have witnessed rapid development of the market, fuelled by small start-ups on the one hand and dairy behemoths such as Bel and Saputo on the other.

Anne Marie Butler, global director, innovation and commercial development at Edlong, believes that the entry of household brands into the category, such as Bel's Boursin and Saputo's Cathedral City, "solidifies it as more than just a trend".

She added that: "It entices more consumers into the space as it is always easier to try something new that has comfort and familiarity associated with it".

Meanwhile, everyday offerings, such as blocks and slices, have been joined by artisan analogues (think beer-washed charcuterie board fillers and cashew-based blues).

In 2019, Britain's first fully vegan 'cheesemonger,' La Fauxmagerie, opened its doors in Brixton, and similarly pithily named shops can be found across the world, showcasing the full variety of what the plant-based cheese market has to offer.

From coconut to cashew

While traditional starch and oil formulations still account for a large proportion of the market, manufacturers are increasingly using techniques such as fermentation, and experimenting with novel proteins in their quest to deliver on the attributes desired by consumers.

Whichever school of 'cheezemaking' you adhere to, there is one ingredient that pops up again and again: coconut oil.

According to Ffion Davies, brand manager at Norseland, which makes the popular Applewood and Ilchester brands, coconut oil is an essential ingredient in the ranges' vegan variants as it provides "the meltability factor".

Axel Katalan, founder of Julienne Bruno, elaborates on why the oil has become such a staple of vegan cheese production:

"Coconut oil can be odourless, and the human palette is accustomed to the sensations that fat creates (if you look at dairy cheeses and other animal products, fats are part of that indulgent sensory feeling one gets with each bite)".

Strictly Roots founder Angelica Ashcroft, meanwhile, highlights that coconut oil "ferments well and firms the product when refrigerated". Alongside the fat, cashews are the primary ingredient in many of the brand's vegan

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cheeses, which run the gamut from aged blues to smoked seasonal specials.

"Other nuts also ferment well but can be grainy when blended or are very expensive options," said Ashcroft.

While the use of ingredients like nuts contributes valuable nutrients, starch and fat-based formulations continue to dominate the market, and according to Ross Crittenden, senior director, Chr. Hansen dairy, are often lacking in protein and calcium.

Israeli food tech company Brevel is seeking to address this nutrition shortfall with its microalgae protein, which "has a full amino acid profile and very high digestibility scores," according to CEO and co-founder Yonatan Golan, who added that the solution also has a very mild flavour and colour.

"One of our piloting partners described it as a 'ghost protein' – it increases protein content without you noticing it is there," said Golan.

The company recently announced that it will be collaborating with Vgarden to create plant-based cheeses containing Brevel protein.

Meanwhile, Davies says that nutrition was also an important consideration for Norseland when formulating its 'cheezes,' which are by consequence fortified with vitamin B12 and calcium. ▶



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Getting cultured

Not so long ago the blue cheese enthusiast or camembert connoisseur might have found little to pique their interest among the ubiquitous line-up of 'cheddas' and mozzarella-style shreds.

However, with the introduction of traditional cheesemaking techniques to the category, this has all changed. Pungent blues threaded with the characteristic veins, tangy no-goat chèvres and oozy French-style wheels are back on the menu – and much more besides.

"The use of dairy-free cultures and mould brings familiar flavours, textures and tastes to suggest more authentic cheese flavours," said Strictly Roots' Ashcroft.

According to Lallemand Specialty Cultures' dairy culture and technology expert, Julien Gadbin-Dherbecourt, microbial solutions are being used more and more in the plant-based category to achieve natural products with fewer ingredients.

The company's offering for the market includes cultures to achieve a bloomy rind, support colour development, enhance flavour and texture, and help control the growth of undesirable microorganisms.

Gadbin-Dherbecourt added: "For some plant-based products they can have specific roles too, such as reducing bitterness from specific molecules, helping to digest others or balancing the nutrition by producing vitamins for example".

Earlier this year, Chr. Hansen introduced new cultures that allowed the company

to develop a dairy-free fava bean cream cheese. The recipe uses only five natural ingredients, a marked contrast to the long and complex labels that are still found in some areas of the market.

Crittenden told *The Plant Base* that "the nutrition profile of our dairy-free cream cheese sample offers 5% protein and 20% fat, which is a healthier formulation than that of dairy cream cheese, which often contains 4.5% protein and up to 25% fat".

Taste toolbox

Would-be plant-based converts often cite cheese as the chief stumbling block to giving up dairy. While traditional offerings are seen as creamy, crumbly and rich, stereotypes of vegan cheeses often hold them to be rubbery, claggy and bland.

It is no overstatement to say that flavour is key to winning over the flexitarian market.

Elong, which first set up shop more than a century ago, offers a large portfolio of taste solutions for both dairy and dairy-free applications.

"What makes flavour in plant-based cheese so extraordinary is that it is not just about having a flavour to represent every cheese – that is a very one-dimensional approach that would not be successful," said Butler, who highlights a recent example of working with a customer that wanted a kashkaval cheese-type profile for their product.

"In this instance, the solution consisted of a milk flavour and a cheese flavour to give all the notes and depth needed and to work with their base ingredients to deliver a mild creamy milky cheese that was just right for their target consumer," she said. ▶



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Meanwhile, Lallemand Bio-Ingredients offers a range of solutions for the cheese alternatives market based on nutritional yeast and its derivatives, to support with areas including fortification and flavour development.

"Savor-Lyfe CA and CC are natural flavours based on primary grown *Saccharomyces cerevisiae*, [that can provide]...an authentic cheese flavour profile, aged and creamy respectively," said Silvia Soragni, global savoury product manager at Lallemand Bio-Ingredients.

Soragni continued: "Yeast extracts rich in umami and kokumi components, such as High-Lyfe 530 A and High-Lyfe 605 A, help add the flavour complexity and long-lasting flavour release typical of aged and fermented dairy products".

Old stereotypes of plant-based cheeses are confounded by innovations like Julienne Bruno's 'Collection 01,' consisting of three delicate artisan products – Burrella, Crematta and Superstraccia – inspired by classics.



Founder Katalan brings his own unique approach to plant-based food development, as he explained: "The focus...is being able to create something that is both familiar, but also new".

"If you stride too far away into the new, it might scare customers; if you try to too closely match the identical flavours, because the core ingredients are different, you might fall short in living up to the expectations. Something magical happens when you bring that fine balance between familiar and new."

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All about the melt

Emerging technologies are helping to tackle some of the most tenacious challenges in the plant-based food market.

Dilek Uzunalioglu, senior director of food discovery and design at Motif FoodWorks, believes that one of the areas where the cheese alternatives category falls short is in delivering the same functionality as dairy products – particularly when it comes to melt and stretch.

“The functionality of dairy proteins and fats along with [the] enzymes and salts that are used in cheese production is essential for the cheesemaking process as well as for developing cheese with the right functional – including melt and stretch – and sensory properties,” Uzunalioglu said.

She continued: “The melt and stretch functionality relates to the formation of the casein network and the weakening of this network with increasing temperature”.

“Starches may provide some of the binding, gelling and emulsification properties, however, [they] cannot provide the full functionality of casein protein due to molecular and physical differences.”

Last year, Motif announced that it had gained exclusive access to prolamin technology through a partnership with the University of Guelph and Alejandro Marangoni, a professor at the institution and founder of high-tech company Coosun. “Prolamin is a protein that is derived from corn... [and contains a] high proportion of the hydrophobic amino acids proline and glutamine,” said Uzunalioglu.

The technology can be used alongside starches, gums and plant-based fats to provide structure to cheese alternative formulations and allow them to melt and stretch like dairy. Uzunalioglu explained: “It forms an extensible network providing stretchability similar to the casein network formed in real cheese”.

Where many flexitarians have happily swapped their milk for ‘mylk’ or enjoyed exploring the meat alternatives aisle, relinquishing cheese has proven a harder sell. But if winning over consumers is posing a challenge, the category has never been better equipped to tackle it – while new technologies and ingredients continue to push the market forward every day. The vegan cheese revolution is coming. Brie prepared. ●

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