



Building a better plant-based burger

Juicy. Tasty. Tender. Delicious. Those are just a few of the words used to describe Cargill's latest prototype – a plant-based burger sensation.



A smart fat solution

Go!Drop, a structured emulsion of plant-based oil stabilized with vegan ingredients, brings sizzle and juiciness to plant-based burgers, while also replicating animal fat in terms of visual appearance, mouthfeel and bite.

[Learn more about Go!Drop.](#)

The result of countless hours of development work, the prototype serves as the launching pad for the next generation of plant-based meat alternatives, illustrating in mouth-watering fashion what lies ahead for the rapidly evolving category.

“Mirroring the sensory and functional properties of animal proteins and fats has been the holy grail of plant-based formulation for years,” says Melissa Machen, Senior Technical Service Manager for protein at Cargill. “With the ingredient technology showcased in this burger concept, it’s clear we’ve made huge strides toward that goal.”

Fat chance

In recent years, much of the plant-based world’s attention was focused on improving the proteins foundational to these formulations... but in Cargill’s latest concept, it’s a new approach to fats and oils that shines.

“Fat is central to great taste,” explains Diliara Iassonova, an innovation architect with the company’s global edible oils R&D group. “Traditional plant-based fats and oils didn’t deliver the sensory experience consumers wanted. We needed to look to new innovation if we were going to close the gap.”

Enter CUBIQ FOODS, a Spanish food tech incubator with a fresh vision for fats and oils. The company’s Go!Drop® technology offered significant benefits, from enhanced functionality and flavor to nutritional improvements. Enticed by the possibilities, Cargill turned its plant-based meat alternative application teams loose. Soon, they were cooking up tempting samples made with Go!Drop and PURIS® pea protein.

The smart fat solution delivered on every count. In plant-based meat alternatives, fats and oils play pivotal roles in structure, taste, texture and nutritional profile. “A big advantage with Go!Drop is its melting point,” Iassonova explains. “Slowly melting animal fats create the juiciness that consumers love. Go!Drop replicates that effect, delivering similar sensory experiences – from the sizzle as it cooks, to the juicy last bite.”

That higher melting point also impacts flavor delivery, yielding another benefit for the smart fat technology. Much like its animal-based counterpart, Go!Drop slowly releases flavors and fat for an optimal layering of taste sensations. The novel solution brings nutritional advantages, too. Depending on inclusion levels, Go!Drop can reduce saturated fat, total fat and calories when compared to conventional plant-based oil solutions, all thanks to its emulsion-based technology.

Protein progress

Still, advances in fat technology are just one piece of the puzzle. Plant proteins remain foundational to these formulations, and an area of ingredient research that continues to yield steady improvements.

“Protein is the number-one ingredient, besides water, in a plant-based meat alternative formula,” Machen notes. “Alongside nutrition, they provide the structure – the backbone and texture – that we’re looking for in meat alternatives.”

Traditionally, soy protein was the only game in town, but in the last decade, pea protein has developed a loyal following. Using pea protein allows brands to avoid common allergens on product labels, while advances in processing (including the availability of both powdered and textured formats) enable the plant-sourced ingredient to look, feel and perform more like traditional animal proteins.

Machen is especially positive about the flavor profile associated with pea protein from joint venture partner PURIS. “Consumers are hungry for more plant-based products, but taste is the big barrier,” she explains. “Better fat solutions like Go!Drop are part of that equation, but we also need to use the plant proteins with the best flavor profiles possible.”

Most plant proteins are burdened with grassy and beany notes, off-flavors that can be hard to overcome, even with liberal use of flavor maskers. PURIS, which has been carefully selecting yellow pea varieties with improved flavor profiles for more than three decades, offers pea protein with a more neutral flavor palette. That base, coupled with advances on the processing side – such as the use of hexane-free approaches to protein extraction – result in a pea protein with nominal taste distractions.

Nutritional nudges

Machen and Iassonova agree that overcoming taste hurdles is a must for the next generation of plant-based burgers, but together with improvements on the flavor front, they say brands also need to pay greater attention to nutrition.

“We’re blessed with this broad base of flexitarian consumers who are keenly interested in plant-based eating,” Machen says, “That bodes well for the growth potential of this nascent category, but these are mainstream consumers with high expectations for everything, including nutrition.”

So much from a simple pea

PURIS® pea protein offers a more neutral flavor palette, thanks to specially selected yellow pea varieties with improved flavor profiles, as well as solvent-free processing methods.

[Learn more about PURIS.](#)



Detractors of plant-based meat alternatives called out early product iterations for their elevated levels of saturated fat, total fats and sodium. In developing the new plant-based burger, Cargill's product development team took note, leveraging Go!Drop to reduce saturated fat in the patty by 30% and cut total fat levels in half (compared to a traditional plant-based burger). Sodium levels were also taken into consideration.

"Sodium is a challenge, as the production processes for many plant proteins add sodium to the finished ingredient," Machen explains. "This not only results in higher sodium levels in final product, but it also makes it more challenging to add flavor systems and seasonings because the sodium level in the plant protein base is already high."

Cargill offers a two-pronged approach to tackle sodium levels. PURIS has developed pea proteins with significantly lower sodium levels than category standards. Additionally, brands can leverage Cargill's line of potassium salt and Alberger® salt products as an alternative (or complementary) pathway to sodium reduction. In the company's latest plant-based burger concept, developers cut sodium levels by 25% per serving over the control – a significant achievement for the segment.

Future forward

Never ones to rest on their laurels, Machen and Iassonova are already contemplating what's next in the plant-based space. "I've been in the food industry for more than 20 years, and the meat alternative space has some of the fastest reiteration cycles I've seen," Machen says.

"Improved versions are coming out every six to nine months, which is incredibly fast for food developers, and I don't see it slowing down anytime soon."

Improvements such as Go!Drop smart fat solutions and PURIS pea proteins are central to those advances, and the two food scientists say even more developments are coming soon.

"As consumers lean into plant-based eating, their expectations will continue to rise," Iassonova says. "That's why we continue to invest R&D resources to bolster the nutritional, functional and sensory possibilities available through our ingredient toolbox."

Up next, she envisions sausages, breakfast patties and crumbles made with Go!Drop and PURIS pea protein. And further down the line? Iassonova is hesitant to cite specifics with so many novel ingredient technologies in development, but says one thing is certain: "It will be exciting to see how the solutions in our R&D pipeline today influence the food and beverage choices of tomorrow."

Partner with Cargill to
see what's possible in plant-based protein.

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