



Vital wheat gluten finds a place in plant-based alternatives

Fueled by a growing flexitarian segment eager to include plant-centric options at center of plate, the plant-based meat alternative space is evolving at breakneck speed. The category boasts some of the fastest reiteration cycles the food industry has seen, with brands bringing updated products to market every six to nine months.

You can credit ingredient suppliers like Cargill for supporting the nascent category's rapid advance. Investments in R&D have produced a wave of innovations, especially on the protein side. Newer proteins like pea, chickpea and potato may get the headlines, but other work, such as identifying promising blends and repurposing established ingredients, has played an important role, too.

Vital wheat gluten is a prime example. Long a staple of the bakery industry, the protein-rich, plant-based ingredient is now finding its way into plant-based meat alternatives, as developers discover how its high protein content and functional benefits can make valuable contributions to their formulations.

"Brands are turning to vital wheat gluten simply as a way to get more grams of protein on their label," explains Anshuman Bhatia, plant protein line manager for Cargill. "So many of the meat alternatives on the market today are short on protein compared to a traditional meat product. Vital wheat gluten can be a cost-effective way to narrow the protein gap."

With a 75% protein content on a dry basis, few plant proteins come close to vital wheat gluten's nutritional profile. Soy flour, for example, is only around 45-50% protein. That means developers need far less vital wheat gluten to hit their protein target. As an added bonus, it's also offers low sodium content.

"Plant-based meat alternatives sometimes take a hit for their sodium content, and plant proteins can be part of the problem," Bhatia says, explaining that some contain a surprising amount of sodium. "That's not a problem with vital wheat gluten – it only contains trace amounts of the mineral."

Protein enrichment and a low-sodium pedigree are big selling points, but Bhatia says vital wheat gluten also brings a bevy of functional attributes to plant-based meat alternative formulations. Among its benefits, the plant protein aids in cohesiveness and structure, assists with water absorption and binding, and contributes much-needed firmness as the product cooks.



“Nutritionally, it brings so much protein enrichment, developers sometimes forget all it can do functionally for their formulas,” explains Conor Sullivan, senior technical services specialist at Cargill, noting that the ingredient is especially helpful in applications like plant-based burgers, cold cuts and sausages. “In these products, vital wheat gluten can serve as the functional ‘glue’ that holds the food matrix together.”

As it’s cooked, the gluten forms a gel that helps vegan nuggets and patties hold their shape without crumbling apart. Its water-holding capacity is a big draw, too. Consider a plant-based nugget, which might be flash-fried to set the breading with oil, then transferred to an oven to finish cooking. Vital wheat gluten will help hold water throughout those cooking steps, resulting in a juicier finished product. It also contributes important textural components thanks to its viscoelastic nature, which provides a meat-like texture and bite.

Flavor is another key consideration in plant-based meat alternatives. Cargill’s proprietary consumer research

finds that taste is consumers’ top priority when selecting a plant-based meat alternative product. While many plant proteins bring flavor baggage – potato proteins are known for their astringent notes, while pulses often have grassy, beany or earthy flavors – vital wheat gluten has a more neutral flavor profile, with subtle grainy notes reminiscent of bread.

The hard-working ingredient can serve as the foundation for a plant-based meat alternative – after all, its use in the Asian meat alternative seitan dates to the sixth century. However, today, vital wheat gluten is increasingly used as part of a protein blend. Pea and soy are common partners, but Sullivan says it pairs well with most plant protein systems.

“Developers are discovering that vital wheat gluten’s nutritional and functional benefits fill several critical gaps in their formulations, which is why the ingredient is finding its way into a growing number of plant-based meat alternative launches,” he explains.

Baked-in benefits



While incorporating vital wheat gluten into plant-based meat alternatives is a relatively new idea, the ingredient is well established in bread, where it offers benefits that support mixing, dough handling and finished product quality.

During mixing, it improves water absorption and mixing tolerance, creating a less-sticky dough. It helps with dough handling, too, improving machinability during scaling and supporting gas retention. Those benefits translate to finished products with improved oven spring and break, higher bread volumes and fine crumb structures.

“Adding vital wheat gluten to a bread formula makes it so much easier to work with,” Sullivan notes. “The dough becomes much more pliable and will tolerate a lot of mechanical action without impacting product quality.”

Vital wheat gluten can help meet nutritional goals, too. With 75% protein on a dry matter basis, a small amount can boost the protein content of breads, cereals, pastas and more.

Established supply

Still, in today's marketplace, identifying promising ingredients is only half the battle. Brands also need reliable supply partners who can deliver consistent quality and offer reliable technical support. Cargill has manufacturers covered on both counts. The company, now the world's largest supplier of vital wheat gluten, has decades of experience with its production and operates four wheat processing facilities spread across Europe's top wheat-producing regions. That geographic dispersion, alongside the company's extensive quality testing protocols, helps Cargill deliver a consistent, reliable supply – year after year.

While the company is an established supplier of vital wheat gluten, Cargill customers in the U.S., Canada and Mexico have in recent years contracted the ingredient through joint venture partner Ardent Mills. That practice ends in Fall 2022, as Cargill formally adds the ingredient to its North American portfolio. For customers, however, the change should be seamless. They'll be receiving the same quality product, with the advantage of greater access to Cargill's vast technical resources – a big help for those developing complex applications like a plant-based nugget or hot dog.

“At Cargill, we've been working in the plant-based meat alternative space for more than a decade, giving us a perspective and body of knowledge that you'll be hard pressed to find anywhere else,” Bhatia says. “For brands, that means we can leverage our full portfolio of ingredients, including vital wheat gluten, to support their unique product innovation journey.”

Learn more about vital wheat gluten, together with Cargill's full portfolio of plant-based proteins, at cargill.com/plantprotein.