



IN THE MIX:

Nutritional beverage powders
up their game

Powdered beverage mixes are having a moment. In recent years, they've evolved from protein powders aimed at stereotypical "gym rats" to premium options packed with functional ingredients. These can range from sports recovery drinks with zero sugar and indulgent flavors to keto-friendly meal replacements marketed to consumers in need of nutrition on the go.

However, while these convenient powders have found a growing consumer base, they bring with them plenty of formulation challenges. Every ingredient in the mix must quickly dissolve in cold liquids. They can't be gritty or leave behind sediment. They need a long, ambient shelf life. They should be packed with protein, vitamins and maybe some other health-supportive ingredients – but not too much sugar. And as with all food and beverage applications, taste is absolutely paramount. At first blush, it sounds like a tall order, but Cargill's Christine Addington insists it's possible to deliver on each of those requirements, thanks in large part to a few key ingredient advances.

Managing flavor fallout

Without question, Addington acknowledges that today's broader consumer base has amplified the challenges product developers face. Topping the list: flavor. Beverage mixes are typically loaded with protein and vitamins – which are great for nutrition, but can be a flavorist's nightmare.

"Vitamins can be especially difficult to work with," the Technical Services Specialist says. "They tend to have bitter or astringent flavor notes that leave a bad taste in your mouth."

Once upon a time, formulators tried to cover up these flavor hurdles with a hefty dose of sugar, but that approach no longer works in today's sugar-wary marketplace. Artificial sweeteners are a no-go, too, leaving brands to experiment with the growing arsenal of high-intensity, stevia-based sweeteners.

“There's been so much improvement, especially within stevia product lines, that brands really can walk away from added sugar and artificial sweeteners, and still manage all the off-flavors inherent in these formulas.”

Christine Addington, Technical Services Specialist

One option is pairing stevia with erythritol, a combination that can help mask some flavor challenges. But for the "Cadillac" approach, she recommends Cargill's latest sweetening solution: EverSweet® stevia sweetener + ClearFlo™ natural flavor. The one-of-a-kind offering provides a more sugar-like experience than other stevia options, with improved sweetness expression and a sweetness profile that is even closer to sucrose.

At the same time, it helps manage off-flavors from other ingredients used in formulation, including earthy and beany notes from plant-based proteins, bitterness from caffeine or vitamins, or metallic tastes from minerals. It also enhances characterizing flavor profiles – from light, fruity notes to rich chocolatey tones.

"That's a significant advantage over most flavor modifiers and maskers, which tend to either mute all the flavors in a system, or add characterizing notes that clash with the desired flavor profile," notes Smaro Kokkinidou, a Principal Food Scientist with Cargill. As she explains, when developers use flavor modifiers to manage off-notes, they also tend to increase expensive characterizing flavor loads to compensate. Since that's not necessary with EverSweet + ClearFlo, brands not only get a great-tasting product, they may also realize cost savings.

Powering up plant proteins

Protein is the other big consideration. As Addington explains: "Consumers continue to look for convenient ways to up their protein intake, and nutritional beverages provide an easy answer."

Attitudes around protein, however, are evolving. While whey remains the dominant player, plant proteins are grabbing a bigger share of the protein pie. Alongside this shift, there's also a steady upward trajectory around protein inclusion levels. Addington says 20 grams of protein is

now a common threshold, with some customers aiming for 30 (or even 40) grams of protein in a single serving. It's all possible, but as protein levels increase, so can the accompanying formulation headaches.

"Two factors limit how much protein we can pack in a beverage mix: solubility and flavor," Addington explains. "Many plant proteins struggle with off-flavors or simply aren't very soluble, resulting in products with sandy, gritty mouthfeels. Either way, they're not likely to gain traction with consumers."

Fortunately, advances in processing technology – led by companies like Cargill's joint-venture partner PURIS® – are finding solutions to the long-standing flavor and solubility problems. Groundbreaking products like PURIS 2.0, with its enhanced solubility and improved sensory profile, are the key.

"With PURIS 2.0, we can take protein levels much higher and still create creamy, indulgent, great-tasting drinks," Addington explains. "Whether it's an RTD product or a powder mix – PURIS 2.0 extends the boundaries."

Texturizers play important supporting roles, too; but with powdered mixes, the choices are more limited. In reduced-sugar products, new tools like Cargill's soluble rice flour can help replace missing bulk and body, while established hydrocolloids lambda carrageenan and xanthan gum play essential roles in plant-based powdered mixes.

"Cold-water solubility is a rarity with hydrocolloids, but lambda carrageenan and xanthan gum are the exceptions," Addington explains. "They work well with cold water or milk, and a small amount can really up the creaminess factor, a must for a plant-based product."

Focusing on health

While protein remains the top ask for these products, there's also growing interest in powders that do more. "This might be the biggest shift," Addington says. "In the past, it was just about protein and vitamins, but now we have customers formulating with ingredients that support broader wellness themes, from mood and cognition to gut health and immunity."

Bringing it all together

Clearly, consumers are asking a lot from today's powdered beverage mixes. Taste is king, but these products must also be low in sugar, packed with protein (preferably from plants) and more often, provide extra health benefits. Cargill's Addington insists it's all possible. She should know, as her team recently developed a nutritional beverage mix that checks each of those boxes. The chocolate-flavored powdered drink delivers 20 grams of PURIS 2.0 pea protein, plenty of vitamins and an efficacious dose of 500 mg of EpiCor postbiotic, while keeping added sugars to just 7 grams, thanks to the sweetening solution EverSweet + ClearFlo. And yes, it tastes great, too!

"Even a year ago, we'd have been hard-pressed to create a powdered drink concept with this much plant protein and this little sugar," Addington admits. "But the combination of PURIS 2.0 and EverSweet + ClearFlo has rewritten the rulebook."

All that's left, she says, is for brands to give the new rules – and new tools – a try.

Elevate your nutritional beverage performance.
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