



Solving for sugar reduction in supplements

Supplements remain a hotbed for innovation, fueled by a \$40.4 billion U.S. market¹ and a consumer base looking to proactively support their health and wellbeing. Today, nearly three in four Americans take dietary supplements, and the overwhelming majority of users (92%) consider them essential to maintaining health.²

Pill fatigue, however, is real – which explains why non-pill supplement sales now eclipse traditional capsules and tablets.³ Gummies are the big winners, ranking as consumers' preferred supplement format,³ but powders, shots and other novel formats are carving out territory in the marketplace, too. While these options serve as a sweeter alternative to traditional pills, the sugar behind the sweet gives many of their health-conscious consumers pause.

"It's a disconnect," points out Chad Rieschl, Principal Scientist at Cargill. "On the one hand, consumers look to supplements to support their health. But on the other, sugar – the ingredient consumers say they are most likely to avoid – is the main ingredient in many of these products."



A sweet rethink

In nutraceutical gummies, sugar may account for nearly half of the formula, contributing to both taste and texture. Those high inclusion levels might pose a significant challenge for some applications, but Rieschl and his R&D colleagues at Cargill insist sugar isn't a prerequisite for great-tasting gummies.

"The small serving size associated with a nutraceutical gummy makes it pretty easy to get all the way down to zero grams of sugar," Rieschl explains, though he notes that brands with lots of parameters around ingredient selection will face a few more challenges.

Polyols like maltitol or isomalt, available in both powder and liquid forms, are typically central to reduced- and no-sugar-added formulations, and are often used in combination with soluble fibers. While maltitol offers a sweetness close to sucrose, when additional sweet flavor is needed, a small amount of a high-intensity stevia sweetener like Cargill's ViaTech® stevia leaf extract or EverSweet® stevia sweetener is usually all that's required.

Cargill's sweetener experts can help formulators find the right solution. For brands that prefer a leaf-based sweetener, the company's ViaTech® portfolio leverages a deep knowledge of the dozens of sweet compounds found in the stevia leaf, including how they interact together and within different food systems. However, to access some of the rarest and best-tasting components in the stevia leaf (Reb M and Reb D), Cargill employs fermentation technology. The resulting ingredient, EverSweet® stevia sweetener, enables the company to deliver great-tasting, zero-calorie sweetness more affordably, more sustainably and at commercial scale.

Texture tune-up

With so many tools to address sweetness, replacing sugar's sweet taste is relatively easy. Achieving the desired gummy texture in a reduced- or no-sugar-added formulation can take a bit more experimentation.

"Traditionally, sugar was critical to the texture of a gummy, but today, we have more alternatives we can leverage," says Rama Sarangapani, a Senior Scientist in Cargill's sweetness applications group.

“It may take several polyols – including a mix of powders and syrups – but with a bit of experimentation, we can get the texture right.”

Food Scientist Devon McDonald echoes that approach, noting that it can also help address shelf-life considerations. “The big thing is not trying to have one ingredient do all bulking,” he explains.

A parallel trend in the gummy space, the steady move from gelatin to plant-based pectin, also impacts how developers manage sugar reduction. Pectin offers a much-cleaner flavor release, so delivering on sweet taste is even easier. “We can do both plant-based and reduced- or even no-sugar-added gummies,” Rieschl says. “There are just a few more considerations around setting conditions which must be met when working with pectin as compared to gelatin.” For example, in order to set properly, pectin has specific parameters around things like solids content, pH and depositing temperature.



Powder power

Sugar content is an even-bigger concern in the nutritional powder space. “Whether it’s a meal- replacement supplement or post-workout protein powder, these consumers often aim to avoid added sugar altogether,” Sarangapani says.

Historically, that resulted in powders made with artificial sweeteners, as brands tried to cover the aftertastes associated with nutritional ingredients. In recent years, however, consumers have grown wary of artificial sweeteners too... pushing formulators to give newer, high-intensity sweeteners like stevia and monk fruit a try.

Formulating without sugar or artificial sweeteners may sometimes mean a finished product that’s a little less sweet, but as long as developers manage any negative flavor attributes from other ingredients in the formula, brands can deliver on both label and taste expectations.

“Customers continue to ask for replacement of artificial sweeteners in favor of stevia and/or monk fruit extracts. The challenge is achieving the higher level of sweetness typical of these products.” Sarangapani observes. “In some products, customers have even been exploring combinations of stevia with artificial sweeteners, paving the way for a gradual, step-like replacement of artificials.”

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Adding to the challenge, many powdered supplements include high levels of vitamins, minerals, caffeine, amino acids, herbs and other ingredients that impart bitterness, off-flavors and astringency. Enter Cargill’s newest sweetening system, EverSweet® stevia sweetener + ClearFlo™ natural flavor. In beverage applications (including dry powder mixes) EverSweet + ClearFlo provides a more sugar-like experience than other stevia options. It delivers rounded sweetness while also managing many off-flavors associated with other ingredients in the formula. EverSweet + ClearFlo can even enhance characterizing flavors like chocolate and fruit flavors.

“EverSweet + ClearFlo has some great operational benefits, too, because it is instantaneously soluble,” Sarangapani adds. “Unlike some stevia products, it goes into water very easily – a must for any dry powdered beverage mix.”

While the advanced sweetening system can solve many sugar-reduction challenges in powder supplements, formulators will still need to replace sugar’s missing bulk. Fortunately, Cargill’s portfolio includes cost-effective options such as maltodextrin.

“Citric acid brings a lot to these formulations, too,” McDonald adds. “It will enhance flavors, modify sweetness, help mask bitterness and extend shelf life. There’s a lot of reasons why it’s often the first ingredient on the label.”

Formulators will likely need to balance sweetness and acidity changes as they move from full-sugar to no-added-sugar systems, as high-intensity sweeteners can impact other flavors and tastes. Fortunately, ingredient suppliers like Cargill can help brands navigate these and other formulation considerations.

Taste above all

While there are plenty of differences between nutraceutical gummies and powder supplements, Cargill’s application team agrees that whatever the format, taste is always the priority. Fortunately, an ever-growing cast of ingredients makes it possible to deliver great taste (along with texture, shelf life and more) with a lot less sugar.

“Brands don’t have to go it alone – we’ll support them every step of the way,” McDonald emphasizes.

In the crowded and ever-changing nutritional space, supplement manufacturers need to anticipate trends and be nimble with formulation. Partnering with Cargill, with our knowledgeable experts and deep ingredient portfolio, can help them do both, giving them the edge they need to solve the sugar-reduction challenge and stand out on store shelves.

Supplement wellbeing without the sugar.
Partner with Cargill.

EverSweet® is a product of Avansya, a joint venture of DSM and Cargill.

SOURCES

¹ Innova Market Insights. “Supplement Trends: Global Market Overview.” 2023.

² Council for Responsible Nutrition. “2023 CRN Consumer Survey on Dietary Supplements,” October 5, 2023.

³ “State of the Supplement Industry,” *Nutrition Business Journal*. 2022.

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