



SWEET SOLUTIONS:

Stevia breakthrough aims to upend
no-sugar-added soda fountain formulation

Long considered the holy grail of sweetening solutions, product developers in the soda fountain space have searched for zero-calorie alternatives to sugar and artificial sweeteners for more than a decade.

“Historically, solubility limitations prevented the best-tasting sweet component of the stevia leaf, Reb M, from being used in concentrated systems like beverage throw syrups,” explains Smaro Kokkinidou, principal scientist at Cargill. “That reality restricted stevia’s use in the fountain drink space, as we struggled to get Reb M steviol glycosides to stay in solution in these highly concentrated systems.”

Now, after Cargill has devoted hundreds of thousands of R&D hours to the effort, she reports that the quest is finally over. The answer lies in a stevia-based newcomer to the sweetener space: EverSweet® stevia sweetener + ClearFlo™ natural flavor.

The combined ingredient delivers wide-ranging benefits, including flavor-modification properties, improved solubility, stability in formulations and faster dissolution – advances that bridge previous gaps in stevia technology. Notably, on the flavor modification front, EverSweet + ClearFlo results in a more sugar-like experience, especially at higher concentrations.

“Even the best-tasting Reb M stevia sweeteners still have some bitterness at ultra-high concentrations, Kokkinidou says, adding that they’re also prone to a bit more lingering sweetness. “This can pose challenges when it comes to flavor expression.”

EverSweet + ClearFlo minimizes those challenges, reducing sweetness linger and providing more upfront sweetness for a temporal profile that comes even closer to that of sugar. Along with those benefits, it helps to mask negative taste attributes from other ingredients in a formula, while enhancing characterizing flavors such as light, fruity notes. Those advances alone represent a significant leap forward in stevia technology, but EverSweet + ClearFlo offers other ground-breaking functionalities around solubility and dissolution.

“This sweetener system allows us to reimagine the possibilities,” explains Leanne Pinsonneault, a senior food scientist at Cargill.



With EverSweet + ClearFlo, we can create a no-sugar-added soda in a concentrated syrup format with the right sweetness intensity... something that until now, was only possible with an artificial high-intensity sweetener.”

As she explains, the typical foodservice soda fountain uses a highly concentrated flavored and sweetened syrup, combined with carbonated water, to achieve the finished beverage. On its own, stevia struggles with solubility at these high inclusion rates. The more soluble steviol glycosides are weighed down by flavor constraints, while the best-tasting molecules won’t stay in solution at the required levels – requiring high temperatures to achieve dissolution.

EverSweet + ClearFlo addresses these constraints, boosting solubility by much as 30%, delivering a 300-fold increase and enabling far-more concentrated solutions, while also dramatically enhancing its dissolution properties.

Unlike standalone Reb M sweeteners, EverSweet + ClearFlo dissolves in water at ambient temperatures, with no heating required. For facilities without heating capabilities, this is a significant advance. (Those same characteristics offer benefits to long-time stevia users, too, as the sweetener system’s near-instantaneous dissolution enables faster manufacturing times.)

Company testing also confirms the sweetener system will hold up over a longer shelf life and across a range of pH levels, providing the stability required for commercial success.

To demonstrate its full potential, Cargill's beverage application team developed a zero-calorie soda fountain drink concept sweetened with EverSweet + ClearFlo. "With so many of the typical hurdles around flavor, solubility and dissolution already solved with EverSweet + ClearFlo, creating a no-sugar-added soda fountain prototype was remarkably straightforward," Pinsonneault reveals.

Food and beverage manufacturers who have had the opportunity to taste products sweetened with EverSweet + ClearFlo offer near-universal praise for the product. "I've been at trade shows and had customer after customer affirm it's the best-tasting stevia on the market," Kokkinidou notes. "It's definitely turning heads and pushing boundaries for reduced- and no-sugar-added formulations."

Cargill created the soda fountain concept to showcase the sweetener system's solubility advances, but the ingredient brings plenty of value to other applications, too. In the beverage space, Kokkinidou reports that the system's flavor-modifying properties are a good fit for high-protein drinks, functional beverages, energy shots and similar formulations that include ingredients with flavor challenges, such as bitterness or vitamin/mineral aftertastes.

"It mutes off-flavors while enhancing characterizing flavor profiles," she says, "a two-pronged benefit that can translate into significant cost savings."

EverSweet + ClearFlo offers formulators one more advantage as it supports simple label declarations. In the U.S., EverSweet can appear on ingredient statements as "stevia sweetener;" ClearFlo labels as a "natural flavor." Cargill proprietary research consistently finds consumers approve of these straightforward designations.

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There are a lot of tools out there that might help with flavor, solubility, dissolution or stability," Kokkinidou says. "But EverSweet + ClearFlo addresses all of those points, which is why this sweetener system stands apart in the market today."

Discover how EverSweet + ClearFlo can transform fountain beverage formulation at [cargill.com](https://www.cargill.com).

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

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