

Stevia's Second Chance

By Kimberly Decker, Contributing Editor

Remember the first time you tried stevia? Not quite an experience to make you wax nostalgic, was it? For years, this high-intensity sweetener, extracted from the leaves of the *Stevia rebaudiana* Bertoni plant, gave natural-food consumers an alternative to sugar, but one that came at a sensory price; few would claim that its licorice-heavy profile came close to sugar's standard. But the times, they are a-changin'.

Back in the day, "there was an issue with the taste profile of stevia," says Sidd Purkayastha, Ph.D., technical director, PureCircle USA Inc., Florham Park, NJ. "The crude extract that was used contained a mixture of approximately 10 different glycosides, not all of which taste good," he says. "Second, because the extract contained a mixture of different molecules, it was impossible to give a clear specification for the product." The ratio of molecules in the extract varied substantially depending on the climate and weather conditions where the stevia was grown. "This variation caused difficulties for food and beverage manufacturers, and, importantly, made it difficult to conduct clinical trials to assess the product's safety," he says.

By improving extraction and purification, today's stevia can be made more consistently, which helps in making better-tasting low-cal beverage products. Purity makes today's stevia sweeteners different. "The main sweetening ingredient is 97% pure rebaudioside A, or reb A—the sweetest and best-tasting component of the stevia leaf," notes Sergio Machado, director, R&D, Whole Earth Sweetener Co., Chicago. For the company's entry into the stevia market, cleansed and milled stevia leaves undergo a freshwater brewing process, similar to the steeping of tea, to extract the reb A. "The reb A is then further purified and blended with small amounts of erythritol, a sugar alcohol found naturally in grapes and melons and produced from natural fermentation," he says. Other ingredients include isomaltulose, a natural disaccharide found in honey and sugarcane juice and produced through natural fermentation; natural cellulose powder derived from fibrous plants; and natural flavors.

The sweet taste ranges from 200 to 400 times that of sucrose. And now that FDA has approved stevia for use as a sweetener in all food and beverage items, its application range grows exponentially. "Reb A offers an excellent choice to beverage manufacturers as an all-natural, zero-calorie, readily processable sweetener alternative to sugar, high-fructose corn syrup and synthetic sweeteners," Purkayastha says. "Besides being storage-stable across a range of products, from low-pH carbonated beverages to dairy-based drinks, reb A can withstand the wide temperature range that is used for pasteurized or UHT beverages." Because reb A isn't reactive with beverage flavors or ingredients, it functions in beverages containing a variety of flavoring agents, including vanillin, cinnamaldehyde and citral.

Its taste profile still doesn't quite replicate sugar's, exhibiting a delayed onset of sweetness like many other high-intensity sweeteners. "It also shows sweetness lingering at high concentrations, and thus the tail is more extended than sugar, but much shorter than sucralose," Purkayastha says. The other factor is loss of bulk characteristics when replacing sugar with sweeteners like reb A, he notes. "Since it impacts the osmolality of the solution's viscosity, it can affect the flavor profile."

Flavor companies have developed specialty flavors to modulate and improve the overall sweetness profile of reb A. "Such flavor systems enhance the upfront sweetness, mask off notes or aftertaste, and add body and mouthfeel to low-sugar products," Purkayastha says. "In the evolving and growing category of functional beverages, reb A brings a compelling proposition of sugar-like taste with health and wellness attributes of a natural, non-nutritive sweetener."

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