



GAZETTE

Monday, October 5, 2015

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Sugar and Calorie Reduction with Stevia

Presented by Adams M. Berzins
Sweetener Solutions Technical Service
Project Leader, Ingredion Inc.

“Natural” and “better for you” are driving consumer tastes and industry formulations. There is a wide variety of ingredients that can help achieve the goal of creating food that consumers want. Focusing on stevia as the starting point, this presentation will cover the current trends and market landscape of stevia and natural high potency sweeteners, as well as addressing common challenges and solutions for a variety of applications.

About Adams Berzins:

Adams has worked extensively formulating products from the ground up in a variety of applications. He believes in understanding the pieces to make a more complete whole. As Project Leader with Ingredion's Sweetener Solutions Technical Service team, his focus is on product development and customer support as part of the Go to Market team, especially in the areas of sugar reduction utilizing a complex tool box, including Enliten (Reb-A Sweetener). Prior to his time with Ingredion, he worked for 6 years in applications development at David Michael & Co.

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From the Chair:

It seems we are on a never ending ride that goes from summer to fall to winter to spring, and back again. Now it's that great time of the year everything pumpkin. The Pumpkin Spice Oreos are my favorite. Whoever that that flavor—nice job!

The Long Island section has been expanding at a nice pace. It's great to see all the new faces and I am looking forward to this season.

See you at the meeting.

Danny Massetti, chair

Upcoming meetings:

The meeting dates for the year are:

Oct. 5, 2015

Dec. 7, 2015– Holiday Party

Feb. 8, 2016 (watch for snow!)

April 4, 2016

June 6, 2016

All meetings are on Mondays

Venues, speakers and topic, TBD

MEETING PLACE & DIRECTIONS

Date: Monday, October 5, 2015

**Place: The Inn at New Hyde Park
214 Jericho Tpk.
New Hyde Park, N.Y. 11040**

Directions: go to www.innatnhp.com

**Times: 6:00PM-7:00PM, cash bar, networking
7:00PM– 8:00PM, dinner
8:00PM– speaker**

**Price: \$40.00 per person with reservation
\$50.00 per person at the door**

**Reservations: Carol Zamojcin @ 516-352-5772,
anytime before Oct. 2, 2015**

Hitting the Beverage Sweet Spot

Natural non-nutritive sweeteners offer opportunities in beverages when the formulation rings clear and clean.

By David Phillips, Technical Editor
Food Processing, May 2014

Having a 79% dollar share of any food or beverage category sounds impressive, even if it is a niche market such as natural soft drinks. One might wonder who had a similar share of the craft beer market back in 1986, for comparison.

In 2014, Zevia LLC (www.zevia.com), Culver City, Calif., owns 79% of the natural zero-calorie soft drink sub-segment. That's a sub-segment has been around for just about 7 years, and it's one that the company expects will grow.

"There are very meaningful differences between soda and any other beverage," says Paddy Spence, Zevia's CEO. "With most other beverages, consumers don't mind the calories, because they see a nutritional benefit to those calories. That's not the case with soda, and because of that, consumers are drinking 20% less soda per capita than they did a few years ago."

Diet soft drinks account for more than 25% of the soft drink market, according to market analysts, but concerns about artificial sweeteners are no longer easily dismissed even the top diet soft drinks are in decline in the U.S. This is where Zevia and its competitors are finding an opportunity.

Stevia, monk fruit and erythritol are fairly new to soft drinks. Used alone or in combinations, these sweeteners can result in something that tastes a lot like diet Coke, but without a trace of aspartame or other artificial non-nutritive sweeteners. They also can be used to formulate significant (25-50 percent) reductions in the sugar content of beverages such as fruit drinks and even flavored milk.

Zevia, launched in 2007, sold 17 million cans in the second quarter of 2013. It is carried in 15,000 retail outlets across all major channels. Its success is largely attributed to a carefully formulated blend of stevia, monk fruit and erythritol.

Combined, they hit the right sweetness and flavor spots, Spence says.

Beverage formulators have an array of ingredients to help them lower the sugar content of their products, but getting the right combination and hitting a flavor target with dead accuracy is crucial if a new or reformulated beverage is going to succeed with customers.

Stevia vs. monk fruit

Stevia rebaudiana is a member of the sunflower family that originated in Paraguay. For more than 100 years—probably a lot longer—its sweetening abilities have been known.

There are several potential extracts or glycosides. Rebaudioside A (reb-A) currently is the most popular. It's around 200 times sweeter than sucrose and has no calories.

Until recently, stevia and its derivatives could be sold in the U.S. only as dietary supplements. But companies with vested interests in the sweetener—Cargill and its partner Coca Cola on the one hand and Pure Circle and PepsiCo on the other—submitted research to FDA regarding reb-A's safety and petitioned for it to become a generally regarded as safe (GRAS) ingredient. FDA granted GRAS status in December 2008.

While it didn't take off like a rocket because of some difficulties with formulation and aftertaste, stevia is gradually having a major impact on beverage formulation.

One of the original petitioners, Wayzata, Minn.-based Cargill (www.cargillfoods.com), has the leading tabletop product, Truvia, and also has a proprietary stevia blend for other food processors. VitaTech stevia sweeteners are Cargill's solution for achieving deeper sugar reductions with clean sweet taste.

"Beverage producers are constantly innovating and striving to develop products with the deeper calorie reductions and better taste that many consumers desire," says Melanie Goulson, sweetness application manager at Cargill. "The higher stevia use levels necessary to accomplish these objectives can sometimes result in unwanted side tastes, like bitterness."

"Many stevia products with high concentrations of rebaudioside A must be formulated with other sweeteners and masking agents because of rebaudioside A's bitterness," says Amy Lauer,

marketing manager at Tate & Lyle (www.tateandlyle.com), Hoffman Estates, Ill. As many as 83 percent of consumers are sensitive to reb-A bitterness, according to sensory research by the company.

Tate & Lyle was a relative latecomer to stevia, introducing its Tateva brand in 2013. But it was a relative pioneer in another beverage sweetener, monk fruit, also known by its Chinese name *luo han guo*.

BioVittoria LLC won GRAS certification for monk fruit as a sweetener in January 2010, then a year later forged an exclusive partnership and equity buy-in with Tate & Lyle. Tate & Lyle launched industrial products under the name Purefruit and more recently supplied BioVittoria's monk fruit to McNeil Nutritionals, LLC, a Johnson & Johnson subsidiary, for Nectresse, a consumer /tabletop sweetener.

Blue California (www.blucal-ingredients.com) Rancho Santa Margarita, Calif., went the either way chronologically. It was an early believer in stevia, having introduced Good&Sweet reb-A in 2009. In early 2012, the company debuted BlueSweet monk fruit extract, for which is also sees great potential. BlueSweet monk fruit extract "is a really good product but has a different profile than stevia," explains Cecilia McCollum, executive vice president.

New products are poppin' up

Of course, not all natural soft-drinks need to be zero-calorie.

Denver-based Oogave. Inc. (www.oogave.com) was born of the frustrations of a restaurant owner who wanted a natural alternative syrup for his soda dispenser. Stephen Anson turned to agave, and soon began selling the syrup line. Bottled products were introduced in 2009.

Gannon Merrell now runs the company, which offers an extensive line of innovative flavors that come in around the 100 calorie mark. They are natural and organic and are accepted at Whole Foods Markets.

"Agave is the sole sweetener in the main line," Merrell says, "so the products end up with no GMOs, no chemicals and they are Kosher and vegan.

The flavors include Watermelon Cream, Strawberry Rhubarb, Mandarin Key Lime and Grapefruit.

Oogave also has a diet line that uses stevia and agave for about 10 calories per serving.

Remember actor Ed Begley, Jr.? He's now a soda entrepreneur. Begley's and Bill's Craft Sodas (www.begleysandbills.com), Orange, Calif., is a new launch from him, wife Rachelle Begley and partner Bill Sabo. The soft drinks contain a proprietary blend of stevia and erythritol for just 8 calories.

Honest Beverages (www.honesttea.com), Bethesda, Md., recently introduced Honest Fizz, a line of zero-cal soft drinks that is sweetened with Truvia.

The entire Zevia line is zero-calorie. Spence believes the move away from artificial sweeteners such as aspartame, acesulfame potassium (ace-K) and sucralose, combined with the 20-plus year growth of zero calorie products, make this the only space for growth in the gargantuan soft drink market, where massive leading brands have been steady at best.

But in order to do well, a natural zero-calorie soda has to taste just like the Diet Coke and Diet Pepsi.

When I bought Zevia, we were using stevia that wasn't as pure as what is available now. It was 80 percent reb-A," he says. "What we use now is 99 percent reb-A, but that's only half of the equation."

Stevia, when used in the levels need to produce a carbonated soft drink, can produce a bitter aftertaste. One reason is its low volume, even at high usage levels, stevia is a tiny fraction of the equivalent volume when using sucrose. Without the bulk of sugar, a zero-calorie soft drink is so thin that bitterness is more easily perceived.

"High intensity sweeteners have no brix," Spence says. "What monk fruit [and erythritol] do is to really boost the sweetness and eliminate any of the bitter notes."

Erythritol is a sugar alcohol similar to xylitol and mannitol. It has about 6 percent of the calories of sucrose and about 70 percent of its sweetness, so in low percentages, it can be used in a zero-calorie soft drink. (In Zevia, erythritol is just 3 percent of the sweetening power; stevia is 83 percent and monk fruit is 15 percent.)

"Erythritol is a little less sweet than sugar, but it has bulk," Spence says. "By using 4g erythritol, we get some of the bulk back and that helps to round out the mouthfeel." That leads to a sweet flavor and no bitter perception.

Food in your drink

In 2007, as carbonated soft drinks were being blamed for obesity and tossed out of public schools across the country, the dairy industry went to work on reformulating flavored milk as a way to avoid the same fate. New nutrition guidelines meant that some beverages would not be eligible to be offered as part of a school lunch menu.

The resulting chocolate milk with less sugar is not only offered in schools but is doing well in the supermarket dairy case, where it appeals to parents and weekend athletes. Dairy's check off organizations have promoted chocolate milk as a good recovery beverage that offers protein, calcium and other nutrients and replenishes muscles after a work out.

"Flavored milk is geared to the youngest consumers and they have a very fickle palate," says Thom King, president of Steviva (www.steviva.com), Portland, Ore.—which, by the way, supplies Oogave. "Once you give them sugar, moving them to a non-nutritive replacement is tough. But I would think that a 25-30% [maybe] a maximum 50% reduction would be possible." But he thinks beverage formulators may have only scratched the surface on what they can do with stevia.

Juice marketer Old Orchard Brands (www.oldorchard.com), Sparta, Mich., is finding out if you can simply remove the sugar from children's beverages. Its recently introduced Old Orchard Kids line has 50% less sugar than other fruit juices simply by reducing sugar levels, not by adding any non-nutritive sweeteners.

Lowering sugar and calories is not the only strategy of beverage marketers. Beverages have the ability to offer more than refreshment. Soluble whey protein has been available to beverage formulators for years and as a tool for boosting protein in nondairy beverage.

Real fruit ingredients continue to be a positive selling point. At the recent Natural Products Expo West, superfruits continue to find their way into drinks. An all-American superfruit, the blueberry, has been making inroads.

"Perhaps the most unique value blueberries bring to a beverage is the fact that beverage formulators know they can put blueberries on

the label and take advantage of the image of blueberries as a healthy, delicious fruit," says Thomas Payne, spokesperson for the U.S. Highbush Blueberry Council (www.blueberrytech.org)

With whole food plant sources like blueberries, beverages can supply natural antioxidants and other beneficial nutrients from plants, which are most efficiently absorbed by the body.

The deep sweetness of blueberries can make a positive contribution to overall beverage flavor when used in concert with other flavors. Blueberries with their natural high sugar levels help to remove sour or bitter tastes in some beverages and naturally sweeten the product. "The fresh appeal is also attractive to health-conscious consumers. Now drinkable yogurts are utilizing blueberries and blueberry puree to impart a natural taste and blue appeal."

Tate & Lyle offers customers a prototype blackberry peach sparkling beverage that has an additional feature: fiber. The company now markets an ingredient called PromOat Beta Glucan, which helps support healthy cholesterol levels for individuals with cholesterol in the normal range.

