Meeting Today's Consumer Demands

Last year, Tate & Lyle polled adults in five European countries to find out their attitudes towards healthy eating*. Among the 5,031 respondents, a majority said that they tried to pursue a healthy diet and to manage their weight. Around 60% of respondents also said that they limit high sugar content and calories within their diet.

by ANNE BARRY

Sugar reduced beverages offer a way to meet consumer demand for healthier products with fewer calories. They also provide an effective method of reducing costs; the fact that sugar prices are expected to remain high and be more volatile for the foreseeable future is a further consideration for the beverage industry, as it makes costs more difficult to manage.

But reformulated drinks must be as appealing to consumers as full-sugar alternatives to be successful. As more mainstream food and drink products are reformulated, consumers continue to primarily base their selections on taste. Consumers will not compromise on taste, with most only repeatedly purchasing energy-reduced alternatives when they are convinced of the high sensory profile of the product. Therefore, when developing healthy food and beverage options, taste is paramount. This is particularly true of "low in" beverage products which must offer consumers a reduced calorie alternative to original products, while still delivering the great taste and "mouthfeel" that they love.

Tate & Lyle helps the customers respond to these consumer concerns and market shifts in supply by working with them to create and reformulate food and drink products. The company can help to formulate beverage products with an optimized nutritional value, while optimizing the cost structure and maintaining the great taste and premium image.

A sweet synergy delivering further calorie reduction in beverages
When reducing a product's sugar content, one approach is to replace part of the nutritive sweetener with a high potency sweetener. SPLENDA® Sucralose has been successfully used alone for sugar optimization, reducing sugar levels by 30% and achieving significant cost savings on sweeteners. It also has a number of benefits that make it appealing to food manufacturers, namely that it is a no-calorie, intense sweetener with a sweetening power approximately 600 times that of sugar.

The stability of SPLENDA® Sucralose means that when used in beverages, the sweetness profile is maintained throughout their shelf-life and the true flavor of the product is delivered more consistently, irrespective of the challenging conditions in some distribution channels. Since the sweetener is also extremely stable, even when exposed to high temperature food processing or storage, there has been a particular increase in the launch of

Complete range of reformulated drinks

Pomegranate grape juice drink

Photos: Tate & Lyle
beverages formulated with it in hot climate countries.

Taking it a step further, the company looked at creating a reduced-sugar product reformulation which allows for calorie reduction of up to 50%, while still retaining the original taste. As SPLENDA® Sucralose can be used in combination with any of the other nutritive and intense sweeteners, Tate & Lyle chose to use fructose. This was in part because of its excellent functional properties, and in part because market research** showed that it is viewed more favorable than other sweeteners by European consumers.

Crystalline fructose is the sweetest naturally occurring sugar. It has a relative sweetness of 117 compared to sucrose at 100. Its properties allow formulators to take advantage of its high relative sweetness, synergy with nutritive and non-nutritive sweeteners and positive interaction with a wide variety of food ingredients, especially when formulating calorie reduced products. By using a combination of FRUCTOPURE® Fructose and SPLENDA® Sucralose, the company was able to reduce total sugars by up to 50%, while achieving significant sweetener cost savings of up to 40% from the full sugar reference.

Indeed, the combination of FRUCTOPURE® Fructose and SPLENDA® Sucralose provides a sweetness synergy which allows a greater sweetener and calorie reduction. With FRUCTOPURE® Fructose, the onset of sweetness perception is sooner than for SPLENDA® Sucralose, boosting fruity tones and spice flavors. It also helps to deliver a more balanced sweetness and taste profile. FRUCTOPURE® Fructose and SPLENDA® Sucralose also have very complementary sweetness profiles (see graph) which help mask the undesirable bitter aftertaste from some ingredients and flavors.

Case study: Creating a calorie reduced pomegranate grape juice drink
The brief to significantly reduce the cost and calories in a pomegranate grape juice drink with 6.5% added sugar was given to the applications team. The target was to achieve a taste profile as close as possible to the full sugar version.

The calorie reduction in the pomegranate grape fruit drink as obtained by using SPLENDA® Sucralose to obtain sweetness without adding any calories, in combination with FRUCTOPURE® Fructose to boost fruitiness. 6.5% sugar was replaced with 1.5% fructose and a very small amount of sucralose. The
rest of the formula remained the same including juice content and total acidity. As a result, a drop in calorie could be seen: from 43 to 23 kcal/100 ml and a reduction in carbohydrates from 10.6 to 5.6 g/100ml.

After production, Tate & Lyle started the evaluation of the samples. Using the trained sensory panel, the full sugar version was compared to the reduced calorie version, using a duo trio test. The results showed that the panel could not find any significant overall difference. Specifically, the panel was asked to focus on parameters such as sweetness, body and mouthfeel. Again no significant differences were detected.

Therefore the targets of the brief were successfully achieved without compromising on taste. Finally, the impact on total cost of the formula was also calculated: by reformulation a 40% savings on the sweetener costs had been achieved.

The Pomegranate Grape Juice Drink is an example of how, by combining the company's sweeteners and leading-edge sweetening know-how, the company helps beverages manufacturers create the nutrition and taste profiles consumers want, along with competitive formulation cost. Other reformulations using SPLENDA® Sucralose and FRUCTOPURE® Fructose, have delivered up to a 50% calorie reduction without impacting on the organoleptic properties.

**Key No. 77034**

*Illuminas – Tate & Lyle Sweeteners Research 2010*  
** Harris Interactive – Tate & Lyle Ingredient Perceptions Research 2009*

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Think Orange, Naturally.  
New Natural Beta-Carotene 1% CWS Color

A copy from Israel has announced its latest formulation for natural beta-carotene color. The product is an innovative, natural beta-carotene color in powder form, designed to instantly dissolve when mixed with cold water. It is suitable for use in a variety of applications such as beverages, dairy, bakery and confectionery.

The formulation not only provides a natural and vibrant color, it also ensures the daily dietary requirement for vitamin A and compensates for vitamin A deficiencies in cases of inadequate fruit and vegetable consumption. Natural beta-carotene is also known as a potent anti-oxidant and can protect against oxidative damage on a cellular level.

According to Innova Market Insights, changes in the European regulatory levels resulted in a decline in the use of the so-called "Southampton Six" artificial colors, which have been forced to carry a warning label since July 20, 2010. Analysis of the top colors being used in confectionery found significant declines for certain artificial colors, including quinoline yellow and sunset yellow.

"Food and beverage manufacturers are facing significant high-stability problems when using natural colorants," explains Udi Alroy, VP Global Marketing & Sales. "A key aspect of this new colorant is the high stability of our product, both within the powder itself and when released into the food matrix. This has been achieved by optimizing the formulation and the anti-oxidant system used to protect the color."

The coloring ingredient is highly stable to heat, light and oxygen as well as across a wide range of pH. This new colorant allows variations in shade from vibrant yellow to orange and delivers a natural and healthy color to existing and new formulations. It is suitable for a wide range of applications, including: carbonated beverages, decorative icing, ice cream, ready to drink beverages, fruit preparations, jelly beans, panned confectionery and more. "Over the years our natural colorants have gained wide recognition within industry for their high quality and excellent performance," notes Alroy. "Our company follows the stringent regulations of the 'European Commission' in order to provide a healthy and natural solution for its customers. We have conducted an extensive range of application trials using our new Lyc-O-Beta 1% CWS. Plus, our in-house application expertise supports our customers in order to ensure a short time to market."

"By offering a competitive natural solution based on a 1:1 comparability to the leading market shade, we are answering a growing consumer trend toward natural solutions and are poised to replace the synthetic product still used in the market today."

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*Photo: LycoRed*