

The Building Blocks of Sugar Reduction

A holistic approach to replicating full sugar taste and performance.



Sweet Peek at Sugar Reduction

With a renewed focus on nutrition and the role food and beverages play in fueling our bodies, the demand for better-for-you solutions is at an all-time high. This is especially true for products that feature low or no sugar. As a result, the industry faces the formidable challenge of formulating products that can still deliver on taste and satisfaction while also meeting the growing demand for reduced-sugar options. So how do brands rise to the occasion? In this report, we will explore a proprietary approach and solutions that deliver on sweetness without compromise.

Evolution of Sugar Reduction

Sucrose, or sugar as it's commonly known, stands as an exceptionally versatile ingredient that is challenging to replicate. Nevertheless, the world of food and beverage innovation has seen remarkable advancements over the last few years, introducing us to cutting-edge ingredient technology that can closely mimic the sensory experience of full-sugar taste without sucrose. The most successful and efficient way of accomplishing this has been through proprietary systems that work together.

ADM's sugar reduction toolbox offers just that, a holistic approach to sugar reduction to address each product's unique challenges. This proprietary approach does not simply work to reduce sugars, but replace, rebalance, and rebuild the structural integrity lost when removing sucrose — to ensure sweet success every time.



8 out of 10 consumers in the United States and European Union intentionally avoid or reduce sugars in their diets.^{1,2}

Priorities When Choosing a New Product for Purchase^{1,2}



Sugar Reduction PLUS^{1,2}



Clean & Clear Label

Sugar reduction is **61% and 65%** more important to US and EU consumers, respectively, when seeking clean label foods & beverages



Nutrition Benefits

Sugar reduction is **62% and 54%** more important to US and EU consumers when seeking low calorie foods & beverages



Balanced Lifestyle

Sugar reduction is **56% and 47%** more important to US and EU consumers when seeking indulgent foods & beverages

The Building Blocks of a Sweeter Solution

Sucrose plays a pivotal, multifaceted role in food and beverages, extending beyond merely providing a sweet taste. Its significance lies not only in its ability to enhance taste but also in the functional properties it imparts to our favorite formulations. Sucrose acts as a foundational ingredient, contributing to texture, color, and mouthfeel while also providing the necessary bulk and structure to various culinary creations.

When crafting sugar-reduced solutions, it's essential to build back the various functionalities that sugar provides. This requires a holistic approach to sugar reduction, one that ADM has the tools and expertise to accomplish.

Holistic Approach to Sugar Reduction

We optimize sugar reduction by leveraging tools across the full ADM pantry to formulate ready-for-market solutions.

Proprietary Sweeteners

Our comprehensive sweetener portfolio includes core and foundational sweeteners, specialty nutritive, fruit-based, and low and no-calorie ingredients to meet your sugar reduction targets.

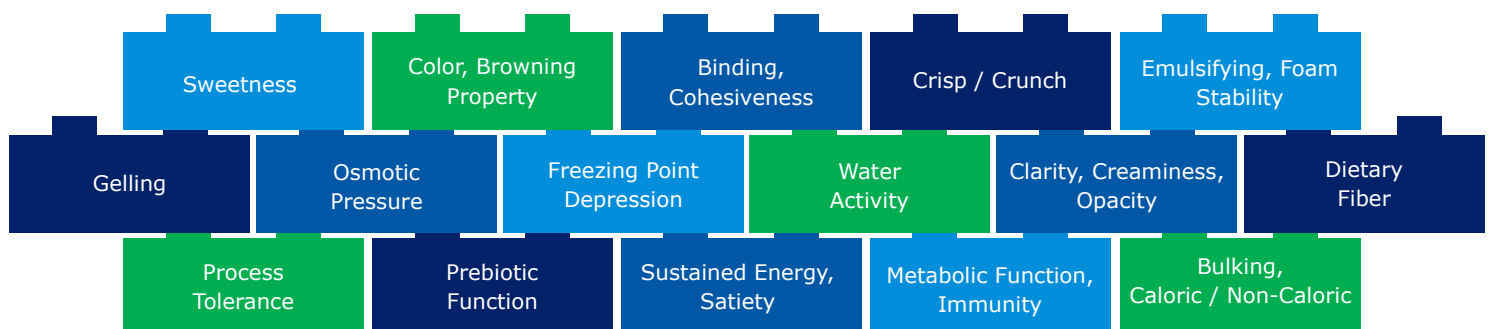
Flavor Technology

Our flavors bring characterizing profiles that complement your sweetener system and solutions that help mask off-notes to improve overall taste perception.

Enabling Ingredients

The enabling ingredients in our sugar reduction toolbox help rebuild texture, stability, and nutritional functionality when reducing sugars.

ADM's deep understanding of the building blocks of texture, stability, and nutrition functionality to ensure Sweet Success.



ADM's Unparalleled Sugar Reduction Toolbox

Meeting evolving and nuanced consumer demands can be daunting, so finding the right partner is critical to your market success. ADM acts as your single solution partner with the insights and innovation to meet consumer needs and formulation challenges head-on.

Our ingredient and flavor scientists work side-by-side to create complete turn-key solutions that make it simple to achieve your ideal product by replacing sweetness, rebalancing flavor, and rebuilding the functionality lost from sugar reduction.



Replace Sweetness

- Corn or Wheat Based Sweeteners
- Sucrose Solutions
- Specialty Nutritive
- Low & No Calorie



Rebalance Flavor

Flavor Modulation for Sugar Reduction: Natural solutions using TasteSpark™ captive flavor technology.



Rebuild Functionality

- Nutritive Sweeteners
- Polyols
- Fibers
- Starches
- Other Ingredients

How to Assess the Formulation

Control 1

<i>RECIPE:</i>	<i>WHAT TO LOOK FOR:</i>
Full Sugar	Sweetness Impact
No Changes	Mouthfeel
<i>No ADM Ingredients</i>	Flavor Profile

Control 2

<i>RECIPE:</i>	<i>WHAT TO LOOK FOR:</i>
Reduced Sugar	Change from Control 1
<i>No ADM Ingredients</i>	Loss of Impact, Mouthfeel
	Change in Sweetness
	Change in Flavor Profile
	Change in Astringency, Bitterness

Solution 1

<i>RECIPE</i>	<i>WHAT TO LOOK FOR</i>
Reduced Sugar	Build from Control 2
ADM Sweetening Solution	Improvement of Sweet Impact
	Improvement of Mouthfeel

Solution 2

<i>RECIPE</i>	<i>WHAT TO LOOK FOR</i>
Reduced Sugar	Build from Solution 1
ADM Sweetening Solution	Comparison to Control 1
ADM Flavor Modulation Solution	Improvement of Sweet Impact, Mouthfeel
	Improvement of Flavor Profile
	Address Negatives in Control 2

Solution 3

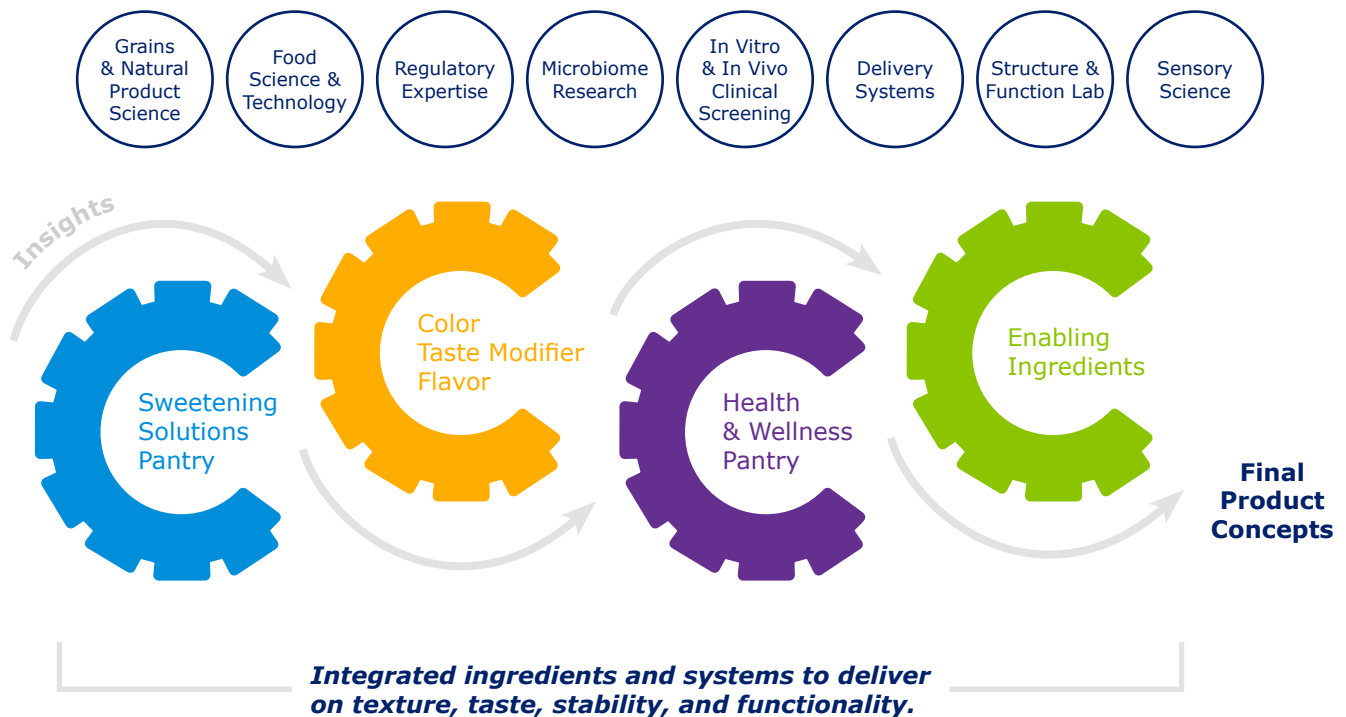
<i>RECIPE</i>	<i>WHAT TO LOOK FOR</i>
Reduced Sugar	Build from Solution 2
ADM Sweetening Solution	Comparison to Control 1
ADM Flavor Modulation Solution	
Enabling Solutions and all other ingredients	



The ADM Advantage

ADM possesses a wealth of capabilities, resources, and knowledge, all united by a common goal: replicating full sugar taste. Our integrated approach allows us to combine insights and strategies from different fields, enabling us to develop innovative solutions and make significant strides towards achieving sugar reduction goals.

Enabling Science and Technologies to Deliver Effective Nutritive Solutions





Customized Solutions to Meet Your Needs

When creating your ideal sugar-reduced product, rarely is there one solution or approach to solving all the challenges you may experience. At ADM, we offer both sweetening systems and advanced flavor technology to produce reduced or zero-calorie solutions, depending on your desired outcome.



Pathways to Sugar Reduction

Building the ideal SweetEdge® solution to meet your caloric, cost and label demands

Reduced Calorie

Sweetening Systems

- Synergy between caloric and high potency sweeteners
- Achieve target sugars and maintain sweetness

Flavor Technology

- Masking basic tastes: acidity, bitterness, metallic notes

Cost Effective Zero Calorie

Sweetening Systems

- High potency sweeteners to achieve sugar reduction targets and sweetness profile

Flavor Technology

- Masking off-tastes and bitterness and astringency
- Re-creating or rebalancing flavor profile

Clean Label Zero Calorie

Sweetening Systems

- Best combination of high potency sweeteners and clean label bulking agents
- Achieve the target sweetness equivalency and functionality

Flavor Technology

- Re-creating or rebalancing flavor profile
- Building back mouthfeel, profile delivery over time



SweetEdge™ Advantage: Success in Sweet Goods & Dairy

In addition to providing clean, sweet taste in reduced and zero calorie systems our SweetEdge™ holistic approach supports the many functional challenges encountered across sweet good and dairy product formulations.



Bakery & Cereal

Our food scientists adjust to each unique application for sugar replacement whether that be a cereal coating, pastry filling, glaze or base.

- Maintaining desired size and texture
- Moisture control and water activity
- Support stability in diverse baking conditions
- Extend shelf-life and maintain sweetness and flavor
- Promote Maillard browning and vibrant color
- Deliver mouthfeel in creams and fillings



Confectionery

Provide a sufficient base to replace all the functionality of the sugar or syrup previously in use.

- Retain stability through every stage of processing
- Build back body in chocolate and coatings
- Achieve desired firm, softness, crunch, etc.
- Provide lasting sweet flavor in chewing gum
- Humectancy in soft candies
- Maintain drying times
- Extend shelf-life



Dairy & Dairy Alternatives

In addition to achieving consumer-pleasing sugar reduction we also support navigating regulatory implications in functional dairy and plant-based solutions.

- Deliver indulgence and creaminess
- Increase body, bulk and mouthfeel
- Lower freezing point in frozen desserts
- Lower acid perception in fermented foods
- Stability in live and active cultures



Nutritional Bars & Shakes

Developing systems that deliver on performance without compromising taste so you can meet your wellness goals while enjoying nutrition-packed products.

- Balance profiles from protein and active ingredients
- Reduce grit in shakes & deliver creamy mouthfeel
- Binding ability and formation in bars
- Moisture control; humectancy
- Stability and shelf-life

CONCEPT 1

Reduced-Sugar Strawberry Gummies

Indulge in a juicy burst of strawberry flavor while keeping sugar levels in check with our delicious Reduced-Sugar Strawberry Gummies. Carefully crafted for those looking to delight their customers with guilt-free treats, our gummies offer a delicious berry taste with a nutritional profile that'll make them a staple in any health-forward product line.



Ingredient Spotlight:

- + **SweetRight® Reduced Sugar Glucose Syrup**
Achieve up to 30% reduced sugars with drop-in replacement for traditional glucose syrups
- + **SweetRight® Stevia Edge-M**
Improved sweetening and reduced bitterness vs. Reb M⁴
Higher usage level than standard stevia without impacting bitterness and sweetness linger⁴
- + **Fibersol®**
Provides a good source of well-tolerated fiber
Supports texture benefits in gummies when sugar is removed
- + **Natural Flavor with TasteSpark™**
Gives well-rounded flavor profile
Gives cleaner finish

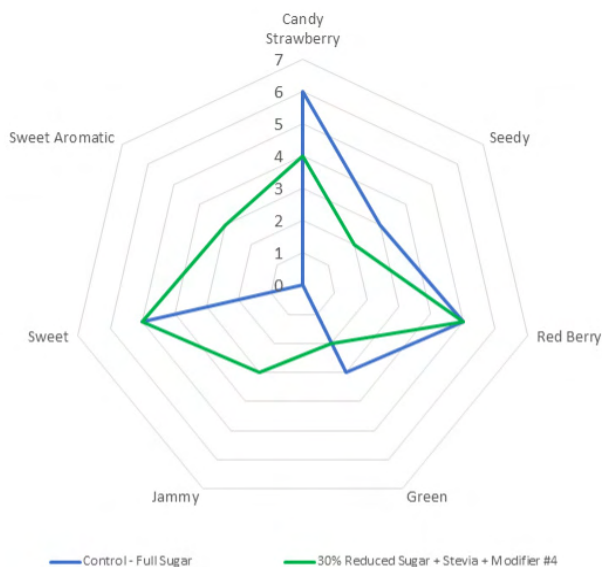
Product Highlights:

- + Serving Size 30oz
- + Sugar Reduction 30%
- + Calories 80
- + Sugars 10g

Ingredients:

Glucose Syrup, Sugar, Water, Soluble Corn Fiber, Gelatin, Natural Flavor, Citric Acid, Vegetable Extract for Color, Stevia Leaf Extract

Descriptive Sensory Profile³



SOLUTION

Nutrition Facts

servings per container	
Serving size	(30g)
Amount per serving	
Calories	80
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 20g	7%
Dietary Fiber 2g	7%
Total Sugars 10g	
Includes 10g Added Sugars	20%
Protein 2g	
Vitamin D --mcg	--%
Calcium 1mg	0%
Iron 0mg	0%
Potassium 0mg	0%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

CONTROL

Nutrition Facts

servings per container	
Serving size	(30g)
Amount per serving	
Calories	90
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 21g	8%
Dietary Fiber 0g	0%
Total Sugars 15g	
Includes 15g Added Sugars	30%
Protein 2g	
Vitamin D --mcg	--%
Calcium 1mg	0%
Iron 0mg	0%
Potassium 0mg	0%

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CONCEPT 2

Nutritional Protein Shake

Experience the perfect fusion of flavor and nutrition with our Nutritional Protein Shake. Unparalleled sweetness without the guilt and optimized for a rich, smooth flavor profile, each 8oz serving delivers 10g of protein, while cutting added sugars by 30%. This delicious shake is sure to appeal to both taste buds & health goals.



Ingredient Spotlight:

- + **SweetRight® Stevia Edge**
 Replace the sweetness of sugar - up to 15% better than other stevia⁴
 Higher usage level than standard stevia without impacting bitterness and sweetness linger⁴
- + **Natural Flavor with TasteSpark™**
 Gives well-rounded flavor profile
 Reduces astringency
 Adds mouthfeel

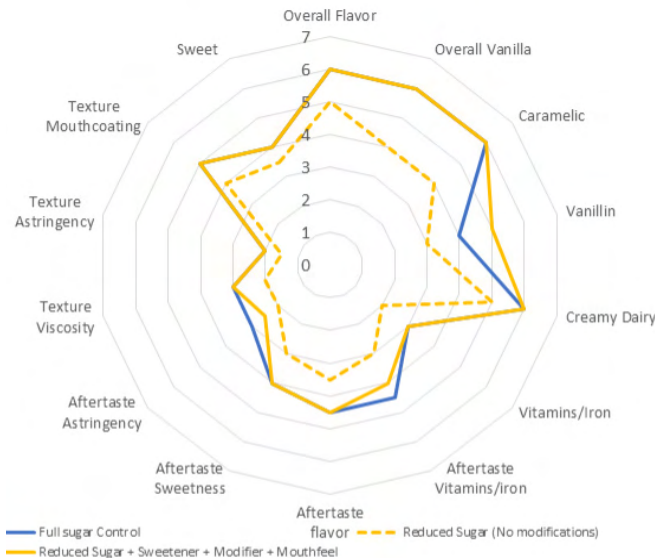
Product Highlights:

- + Serving Size 8oz
- + Sugar Reduction 30%
- + Calories 190
- + Total Sugars 12g
- + Added Sugars 7g
- + Protein 10g

Ingredients:

Water, Glucose Syrup, Milk Protein Concentrate, Sucrose, Canola Oil, ProFam 825 Soy Protein, Nutrablend (22 Vitamins & Minerals), Stabilizer Blends (Cellulose Gel/Gum Blend, Carrageenan, Tripotassium Phosphate, Dipotassium Phosphate, Sodium Hexametaphosphate), Natural Flavors, Stevia Leaf Extract

Descriptive Sensory Profile³



SOLUTION

Nutrition Facts

servings per container	
Serving size	(251g)
Amount per serving	
Calories	190
% Daily Value*	
Total Fat 4g	5%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 29g	11%
Dietary Fiber 0g	0%
Total Sugars 12g	14%
Includes 7g Added Sugars	
Protein 10g	
Vitamin D 17mcg	90%
Calcium 300mg	25%
Iron 4mg	20%
Potassium 466mg	10%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

CONTROL

Nutrition Facts

servings per container	
Serving size	(251g)
Amount per serving	
Calories	240
% Daily Value*	
Total Fat 4g	5%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 41g	15%
Dietary Fiber 0g	0%
Total Sugars 16g	20%
Includes 10g Added Sugars	
Protein 10g	
Vitamin D 17mcg	90%
Calcium 294mg	25%
Iron 4mg	20%
Potassium 458mg	10%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

CONCEPT 3

Reduced Sugar Ready-to-Eat Puff Cereal

Introducing our Reduced-Sugar Ready-to-Eat Puff Cereal, designed to meet the demands of health-conscious consumers without compromising on taste or quality. Our solution offers a significant reduction in sugar compared to traditional options, making it an ideal choice for those seeking a lower sugar alternative. This cereal delivers a balanced flavor profile with a cleaner finish, ensuring a satisfying breakfast experience every time.



Ingredient Spotlight:

- + **SweetRight® Reduced Sugar Glucose Syrup**
Achieve up to 30% reduced sugars with drop-in replacement for traditional glucose syrups
- + **Natural Flavor with TasteSpark™**
Gives well-rounded flavor profile
Gives cleaner finish

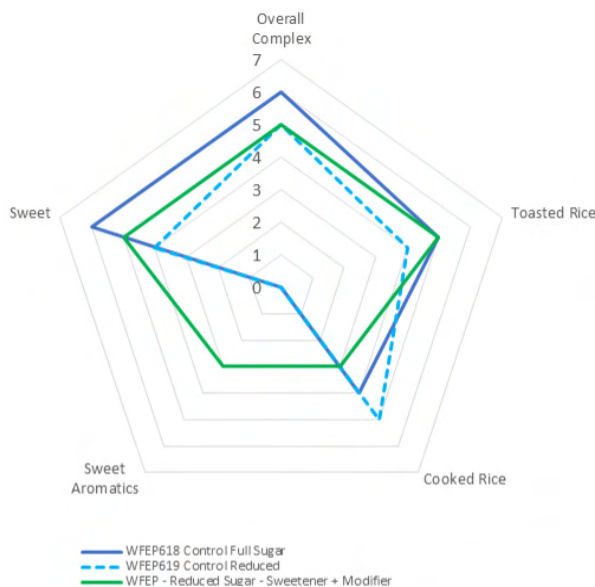
Product Highlights:

- + Serving Size 40g
- + Sugar Reduction 30%
- + Calories 150
- + Sugars 10g

Ingredients:

Rice Puffed Cereal, Sugar, Glucose Syrup, Canola Oil, Natural Flavor

Descriptive Sensory Profile³



SOLUTION

Nutrition Facts

servings per container	(40g)
Serving size	(40g)
Amount per serving	
Calories	150
% Daily Value*	
Total Fat 1g	1%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 33g	12%
Dietary Fiber 2g	7%
Total Sugars 10g	
Includes 9g Added Sugars	18%
Protein 2g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 0mg	0%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

CONTROL

Nutrition Facts

servings per container	(40g)
Serving size	(40g)
Amount per serving	
Calories	160
% Daily Value*	
Total Fat 1g	1%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 34g	12%
Dietary Fiber 2g	7%
Total Sugars 13g	
Includes 13g Added Sugars	26%
Protein 2g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 0mg	0%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.



ADM is Your Sugar Reduction Innovation Leader

ADM is at the forefront of innovative and advanced reduced sugar solutions. Leverage our expertise and advanced technology to create your next-generation of better-for-you treats.

How to get started on your next sugar reduction project?

- 1 Brand Parameters -**
What are you looking to accomplish?
- 2 Defining Targets -**
Which targets are you looking to hit?
- 3 Support Level -**
What level of support do you need to meet your goals?



ADM's vast portfolio of ingredients is simply unmatched



Sustainably sourced, non-GMO, organic and other options to meet all labeling and consumer preferences



A solution for every functional or nutrition-driven formulation need



The sugar reduction tools and expertise you need for success

¹ADM Outside Voice US Consumers & Sugar Reduction; August 2020

²ADM Outside Voice EU Consumers & Sugar Reduction; April 2022

³ADM Sensory Research Results & Analysis. Erlanger; ADM Science & Technology; June 2023

⁴ADM Proprietary Seviol Glycoside Research Results & Analysis. Decatur; ADM Science & Technology; October 2022



Ready to get started?
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