



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.

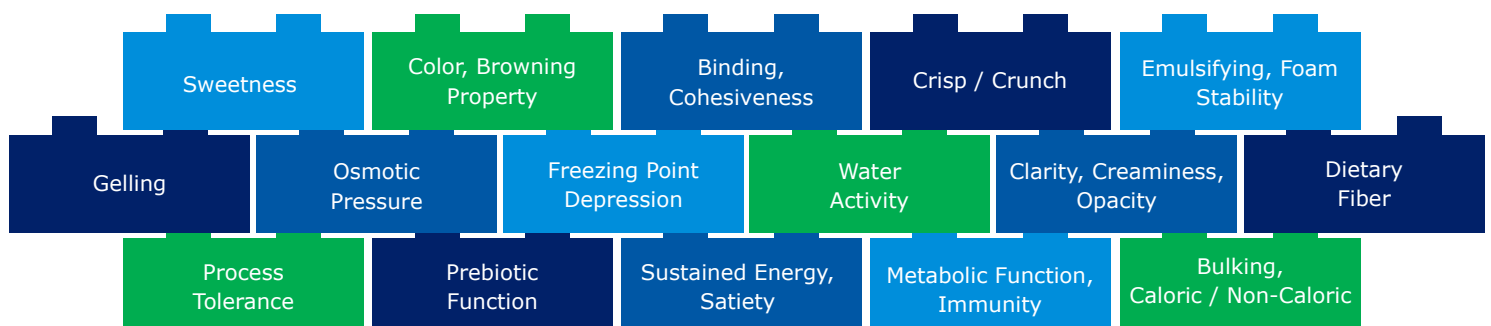
Flavor Technology

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

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

Control 2

| RECIPE: | WHAT TO LOOK FOR: |
|---------------------------|-----------------------------------|
| 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

| RECIPE | WHAT TO LOOK FOR |
|--------------------------------|-----------------------------|
| Reduced Sugar | Build from Control 2 |
| ADM Sweetening Solution | Improvement of Sweet Impact |
| | Improvement of Mouthfeel |

Solution 2

| RECIPE | WHAT TO LOOK FOR |
|---------------------------------------|--|
| 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

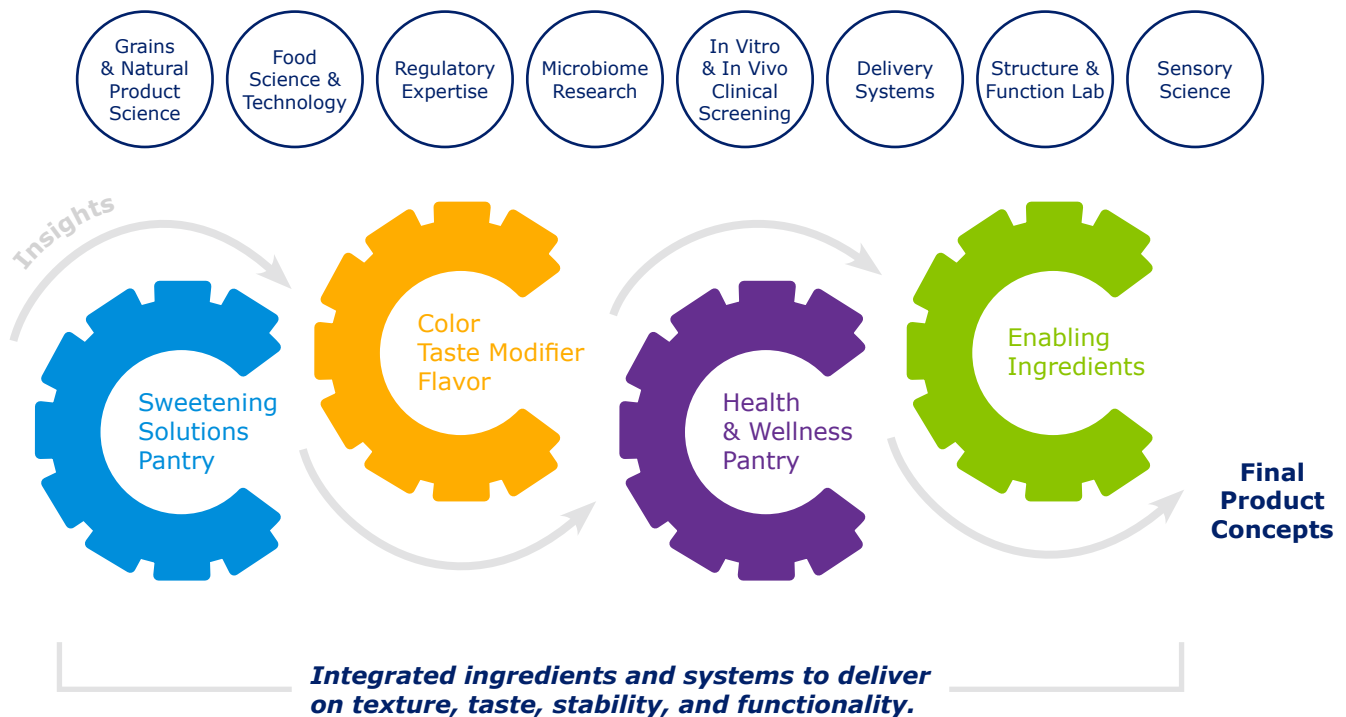
| RECIPE | WHAT TO LOOK FOR |
|---|-------------------------|
| Reduced Sugar | Build from Solution 2 |
| ADM Sweetening Solution | Comparison to Control 1 |
| ADM Flavor Modulation Solution | |
| Enabling Solutions and all other ingredients | |



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 options, depending on your desired outcome.



Beverage Pathways to Sugar Reduction

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 match profile and maximize upfront sweetness

Flavor Technology

- Masking off-tastes and bitterness and astringency

Natural Zero Calorie

Sweetening Systems

- Best combination of natural high potency sweeteners and calorie-free bulking sweeteners
- Achieve the target sweetness equivalency and functionality

Flavor Technology

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

CONCEPT 1

Refreshing Reduced Calorie Lemonade

Crafted with meticulous attention to detail, this lemonade satisfies cravings for a sweet and tangy flavor while cutting back on calories. It harnesses ADM’s innovative expertise to incorporate naturally sourced sweetening and flavor technology without compromising on taste.



Ingredient Spotlight:

- + SweetRight® Organic Agave Syrup
 - Can reduce sugars 25-30%
 - Low-glycemic
 - Sustainably Sourced
 - Fair Trade
 - USDA certified organic, Non-GMO
- + Natural Flavor with TasteSpark™
 - Reduces astringency
 - Adds mouthfeel
 - Gives well-rounded flavor profile

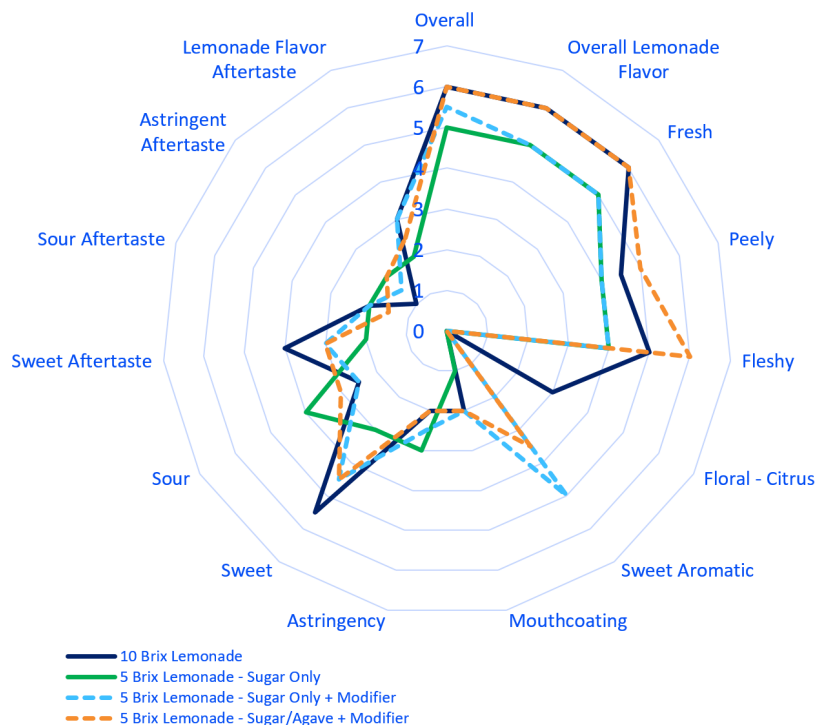
Product Highlights:

- + Serving Size 12oz
- + Sugar Reduction 60%
- + Calories 70
- + Sugars 16g

Ingredients:

Water, Sugar, Organic Agave Syrup, Lemon Juice from Concentrate, Natural Flavor.

Descriptive Sensory Profile³



SOLUTION

Nutrition Facts

| | |
|---------------------------|---------------|
| servings per container | |
| Serving size | (361g) |
| Amount per serving | |
| Calories | 70 |
| % Daily Value* | |
| Total Fat 0g | 0% |
| Saturated Fat 0g | 0% |
| Trans Fat 0g | |
| Cholesterol 0mg | 0% |
| Sodium 5mg | 0% |
| Total Carbohydrate 18g | 7% |
| Dietary Fiber 0g | 0% |
| Total Sugars 16g | |
| Includes 16g Added Sugars | 32% |
| Protein 0g | |
| Vitamin D --mcg | --% |
| Calcium 3mg | 0% |
| Iron 0mg | 0% |
| Potassium 5mg | 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 | (379g) |
| Amount per serving | |
| Calories | 180 |
| % Daily Value* | |
| Total Fat 0g | 0% |
| Saturated Fat 0g | 0% |
| Trans Fat 0g | |
| Cholesterol 0mg | 0% |
| Sodium 5mg | 0% |
| Total Carbohydrate 46g | 17% |
| Dietary Fiber 0g | 0% |
| Total Sugars 44g | |
| Includes 35g Added Sugars | 70% |
| Protein 0g | |
| Vitamin D --mcg | --% |
| Calcium 4mg | 0% |
| Iron 0mg | 0% |
| Potassium 5mg | 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.

CONCEPT 2

Sugar Free Lemon Ready-to-drink Tea

With a perfect balance of black tea and refreshing tangy lemon flavor, this ready-to-drink beverage provides a fusion of flavors. Its sugar-free formulation ensures that consumers can enjoy the goodness of lemon flavored tea without the unwanted calories and sugar.



Ingredient Spotlight:

- + SweetRight® Stevia Edge-M
 - Improved sweetening vs. Reb M⁴
 - Increased solubility (5x) vs. Reb M⁴
 - Higher usage level than standard stevia without impacting bitterness and sweetness linger⁴
- + Natural Flavor with TasteSpark™
 - Adds mouthfeel and body
 - Reduces astringency
 - Gives cleaner finish

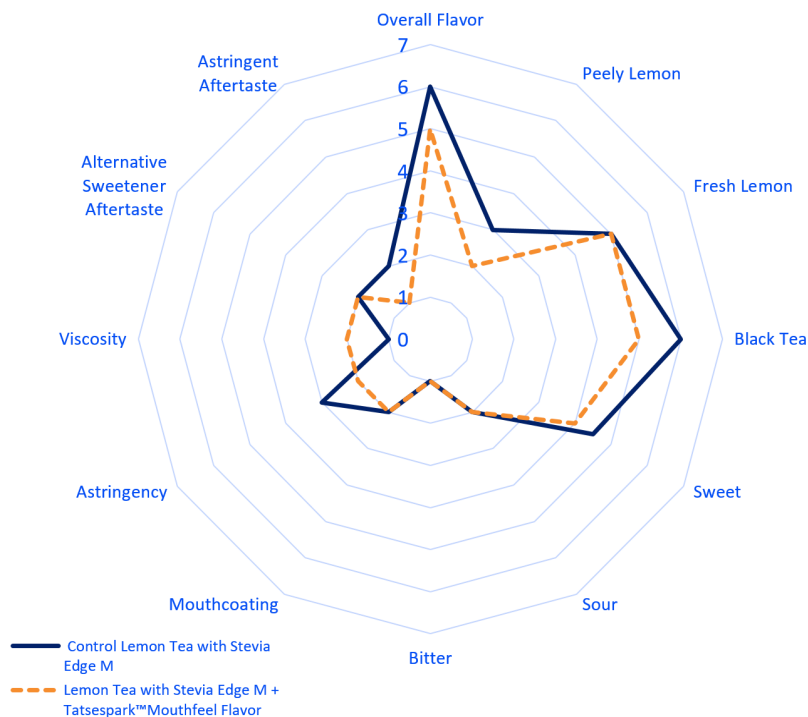
Product Highlights:

- + Serving Size 16oz
- + Full Sugar Reduction
- + Calories 0
- + Sugars 0g

Ingredients:

Water, Black Tea Extract
 Natural Flavor, Stevia
 Leaf Extract, Citric Acid

Descriptive Sensory Profile³



SOLUTION

Nutrition Facts

| | |
|---------------------------|-----------------------|
| servings per container | |
| Serving size | (474g) |
| Amount per serving | |
| Calories | 0 |
| | % Daily Value* |
| Total Fat 0g | 0% |
| Saturated Fat 0g | 0% |
| Trans Fat 0g | |
| Cholesterol 0mg | 0% |
| Sodium 10mg | 0% |
| Total Carbohydrate 1g | 0% |
| Dietary Fiber 0g | 0% |
| Total Sugars 0g | |
| Includes 0g Added Sugars | 0% |
| Protein 0g | |
| 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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