Sodium Reduction Case Study: Premixes

Summary

A leading premix manufacturer contacted Kudos Blends seeking a solution to reduce their sodium level in bakery premixes and concentrates. A simple 1:1 exchange of sodium bicarbonate for KODA™ potassium bicarbonate significantly reduced premix sodium content and extended the overall shelf-life by 50%.

What KODA™ 200 Can Do for You

- Reduce sodium in premixes by up to 40% without compromising end-product volume.
- Provide a quality end-product with an open, aerated crumb and a soft mouthfeel.
- Increase stability and shelf-life of premixes by up to 50%.
- Replace sodium with the essential mineral potassium to improve the nutritional profile.

Our patented sodium-reducing KODA™ technology is also available for applications such as cakes, crumpets, tortillas, muffins, doughnuts, pancakes, cookies, crackers, premixes and many more.

To find out more about how to improve the nutritional profile of your baked goods, contact our experts.

Background

A global premix manufacturer aimed to reduce sodium in a crème cake premix without losing quality or shelf-life, as they were facing pressure to meet sodium reduction targets introduced in the UK. Initial sodium reduction methods did not provide the results they required:

- Replacing sodium bicarbonate with standard bakery-grade potassium bicarbonate significantly reduced the shelf-life of the premix compared to sodium bicarbonate.
- Reducing sodium chloride (salt) had little impact on overall sodium content and negatively impacted flavour.
- Replacing sodium acid pyrophosphate (SAPP) with a calcium-based acidulant resulted in cakes with a poor volume and an undesirable crumb structure.

Challenge

Sodium bicarbonate accounts for up to 50% of the sodium present in chemically leavened baked goods. As such, the most simple and effective way to reduce sodium is to replace sodium bicarbonate with a grade of potassium bicarbonate specialised for bakery applications. Premix and concentrate manufacturers often require product-specific features from the potassium bicarbonate used in their recipe to ensure the highest quality baked goods every time.

Dry blends contain many ingredients which must all remain stable and inactive throughout storage, whilst ensuring their total functionality when the product is eventually baked in order to guarantee texture, volume and flavour.

An increased particle size will decrease the available surface area for premix particles to interact and react during storage. Therefore, the particle size of the potassium bicarbonate must be perfectly balanced to ensure full solubility and functionality when creating batters, but not so fine as to reduce the stability during the shelf-life of the premix or concentrate.

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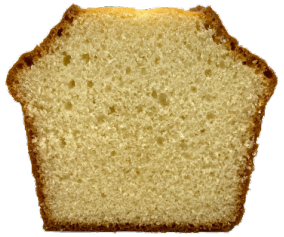
Solution

The particle size of KODA™ 200 potassium bicarbonate has been specifically engineered to achieve equal or greater shelf-life in a premix when compared to sodium bicarbonate, all whilst offering a significant sodium reduction, without impacting the volume, texture or taste.

The images below demonstrate the significant improvement in overall quality observed when using KODA™ 200 compared to a competitor's bakery-grade potassium bicarbonate. Testing was conducted using a Madeira cake premix manufactured 12 months prior to baking. All cakes were made with identical premix recipes, with only the bicarbonate source changed.

Cookies Made Using Different Bicarbonate Sources

Sodium bicarbonate	KODA™ 200 potassium bicarbonate	Industry potassium bicarbonate
		
424/100g of sodium	272/100g of sodium	272/100g of sodium

Standard bakery-grade potassium bicarbonate produced a product with a dense crumb, lacking volume, and a poor internal texture. These issues are attributed to its inadequate functionality, which prevents sufficient moisture from being driven off during baking. KODA™ potassium bicarbonate effectively addresses these issues by not only delivering a comparable end-product but also boasting an impressive 36% reduction in sodium levels, without compromising on quality.

In the premix, our KODA™ 200 not only matched the shelf-life of a premix made with sodium bicarbonate at 12 months but surpassed it significantly, with no loss in volume or overall quality after 18 months. This extended shelf-life not only ensures product integrity but also provides manufacturers with greater flexibility.

One of the key factors contributing to the performance of KODA™ 200 is our free-flow technology. This cutting-edge innovation, inherent in the entire KODA™ range, guarantees a shelf-life of three years. This means that KODA™ 200 can be seamlessly incorporated into chemically-leavened premixes and stored for extended periods without any compromise in functionality or efficacy.

Get in Touch

Our expertise has been developed through years of bakery industry experience combined with in-depth scientific knowledge of leavening agent chemistry.

Our team of highly skilled chemists and bakers are always on hand to support our customers in finding the right solution for their bakery projects.

Contact us at: info@kudosblends.com or +44 (0)1299 271 333.