Double the Shelf-Life of Pancakes with ZEUS™ G90 Baking Powder

Case Study

Summary

ZEUS™ G90 baking powder ensures that pancakes maintain their improved texture and taste throughout their extended shelf-life, guaranteeing consistent quality that consumers can trust. Overall, these benefits position manufacturers to better meet market demands and consumer expectations while achieving operational efficiencies and market growth.

For manufacturers, the short shelf-life of pancakes can lead to significant challenges, including increased waste, tight production schedules, and customer dissatisfaction due to rapid mould growth and spoilage. By replacing your current baking powder with ZEUS™ G90, you can increase shelf-life by up to double while maintaining the soft, light texture customers love.

What ZEUS™ G90 Can Do For You

- Increase product shelf-life through improved preservative functionality.
- Create softer and larger pancakes through optimised leavening.
- Maintain pancake softness and reduce gumminess over shelf-life.
- Limit food waste to increase profitability.
- Simplify production scheduling and stock holding.

Our ZEUS™ technology is also available for applications such as cakes, doughnuts, crumpets, scones and many more. To find out more about our range and their capabilities, contact our experts.

Background

In recent years, there has been a notable surge in not only the volume of pancake production but the variety of flavours and formats too. This trend reflects a shift from traditional crepe-style pancakes to the more stackable American or Scotch styles. The global pancake market is currently valued at $945m per annum with growth expected to continue.

The Benefits of Extending Shelf-Life

By reducing waste, fewer expired products need to be discarded, leading to lower production costs and increased profitability. Manufacturers can produce larger batches without the concern of products expiring before sale, resulting in more efficient production cycles. This also enables the potential to distribute products over greater distances, opening new markets and expanding the customer base.

For consumers, longer-lasting pancakes means they have more freedom to buy and consume the product when it suits, adding convenience to their lives. From a business standpoint, longer shelf-life can improve a brand's reputation, as customers will see the pancakes as fresher and higher quality. This can attract more retailers and shoppers, giving an edge over competitors with shorter-lasting products.

Challenge

The challenge in the bakery industry is that extending the shelf-life of pancakes typically requires the use of preservatives and an acid. A preservative like potassium sorbate is commonly employed to inhibit microbial growth and extend shelf-life. However, its effectiveness is significantly influenced by the pH of

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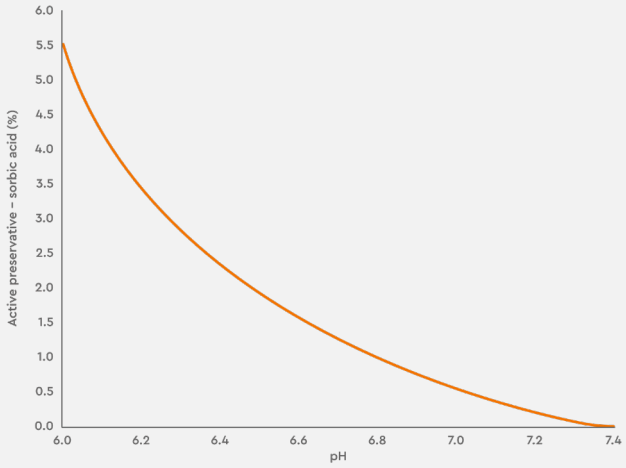
the baked goods. Potassium sorbate functions optimally in environments with a pH range of 3 to 6. In baked goods using a standard baking powder, the pH tends to be 7 and above. When the pH sits in that range, the potassium sorbate is less active and therefore less efficient at preventing spoilage.

Acidic ingredients, such as citric acid, can be used to reduce the pH of the baked goods and enhance the effectiveness of preservatives. However, acids interfere with the baking powder reaction, causing premature gassing which limits aeration during the cooking stage. This can result in issues such as loss of volume, waterlogging and an undesirable texture in the final product. Therefore, while these methods can extend shelf-life, they are likely to harm the product itself and cause customer dissatisfaction.



Once the product reaches a pH of 7.4 or higher, the preservatives become least active.

Solution

Here at Kudos Blends, we have created a baking powder that achieves superior volume and texture, with the added benefit of extending the shelf-life in one easy-to-use ingredient. Using ZEUS™ G90 in place of the current baking powder lowers the pH of the product into a more optimal range for preservative effectiveness. This allows the preservatives in the recipe to thrive, while providing the best-balanced leavening for fluffier and longer-lasting pancakes, resulting in happier manufacturers and consumers.

This trial focuses on the use of potassium sorbate as a preservative in three different scenarios. Post-baking, the pancakes were all stored under controlled conditions and analysed fairly.

Scenario 1

Standard baking powder (0.2% preservative)

Scenario 2

Standard baking powder + citric acid (0.2% preservative)

Scenario 3

ZEUS™ G90 (0.2% preservative)

The addition of citric acid negatively affected the leavening of the pancake, producing an end-product that lost volume and became denser. When producing the pancakes, the batter with citric acid did gas off at a faster rate, which would cause issues in production as more of the gas is being lost earlier in the line. When tasting, the pancakes also exhibited a tougher and chewier bite compared to the softer and fluffier eat from the ZEUS™ G90 pancake.

	Standard baking powder	Standard baking powder + citric acid	ZEUS™ G90
pH	7.92	6.54	6.61

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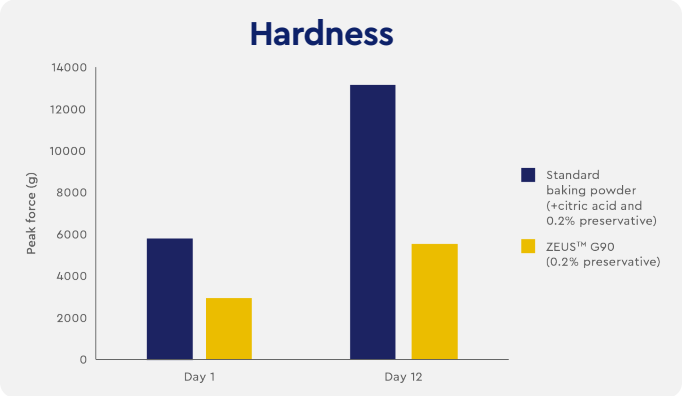
ZEUS™ G90 significantly reduced the pH of the pancake, without the need for citric acid addition. The ZEUS™ G90 pancakes had a pH of 6.61 compared to the standard baking powder being 7.92. The addition of the citric acid did achieve a reduced pH, but as seen in the photos, the pancake's structural and textural properties suffered.

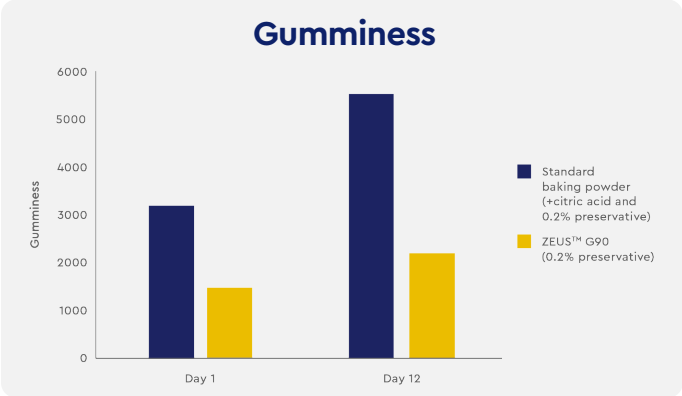
When the pH is reduced to 6.61, the effectiveness of potassium sorbate increases, compared to a pH of 7.92. This increase in effectiveness is due to the higher proportion of the preservative being in its active, unionised form. ZEUS™ G90's boost in preservative effectiveness makes potassium sorbate a far more viable option for extending the shelf-life of bakery products, while still maintaining product quality.

The pancakes were observed and analysed over their shelf-life. After 6 days, scenario 1 showed signs of mould . It was not until 12 days later that the pancakes using ZEUS™ G90 and the standard baking powder with citric acid (scenario 3) started to exhibit visual mould.

That is double the mould-free shelf-life with a simple change of baking powder. However, product quality over life is just as essential. Having a mould-free pancake is important, but if the pancake becomes hard and inedible, then a longer shelf-life becomes irrelevant.

Textural analysis was conducted on the pancakes over their life. The standard pancakes with citric acid created a firmer pancake from day one and the pancakes hardened significantly by day 12. This means that even though the pancake achieved the same mould-free shelf-life as ZEUS™ G90, the product quality deteriorated at a much faster rate, creating tough and gummy pancakes after 12 days. When using ZEUS™ G90, the pancakes remained softer over their life.





In conclusion, ZEUS™ G90 successfully extended the shelf-life of the American pancakes with potassium sorbate and produced softer, larger pancakes that retain their texture over time. This innovation allows manufacturers to increase batch sizes, streamline production, and access new markets, resulting in wider distribution and greater customer satisfaction. Additionally, as ZEUS™ G90 is phosphate-free, it provides a more sustainable alternative to conventional baking powders, addressing both product quality and environmental impact concerns.

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.

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