Baking CAKE

BAKERguide Vol. 3-2

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Arla Foods Ingredients
Discovering the wonders of whey

Innophos

Would you like less egg dependency supporting cage-free?

This is now possible with Nutrilac® from Arla Foods Ingredients. It's a price-stable egg replacement with similar properties to egg. In fact, sensory evaluation show that Nutrilac® delivers a number of quality improvements. Cakes keep a moister, fresher feel during shelf life and the crumb is less fragile and more resilient. There are several processing advantages too. Now baking high-quality cakes with less egg is not only possible, it's also a business proposition that consumers will enjoy.

Benefits

- Less egg dependency supporting transition to cage free
- Higher food safety (pathogenic-free)
- Natural ingredients
- High quality whey proteins
- Extended shelf life compared to fresh eggs
- Risk management (fluctuations in egg prices, supply security)

Cost savings

- Ambient transportation – no need for cooling
- Less storage space needed
- No refrigeration needed

If you think egg prices are hard to handle, a Nutrilac® solution will put you in control of the cost and quality of your cake brand. Reach out to bakery@arlafoods.com to learn more.

Arla Foods Ingredients
Discovering the wonders of whey

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WHAT IS CAKE?

Cake is one of the most popular desserts in the world. It is a sweet baked good made from flour, sugar, eggs, and butter or oil. Leavened with baking powder or baking soda, it is often flavored with vanilla, cocoa, orange, almond or others. The texture of cakes can range from light and airy to dense and moist, depending on the type of cake and the ingredients used. Cakes are typically served for special occasions such as birthdays, weddings, and other celebrations. However, they are also consumed as snack cakes or for indulgence throughout the day. Cakes can be served alone or with the addition of frosting, fruit or cream filling, nuts, or fondant, to name a few varieties.

The current cake market is valued at USD 65.68 billion as of 2023, and is expected to grow at a compound annual rate (CAGR) of 3.0% from 2024 to 2030. Cakes, along with other baked goods, are always popular among a wide range of consumers. However, there are currently some notable trends in the market that are changing traditional cake consumption.

The demand for healthier and more nutritious cake options is a recent shift in the cake industry. Many consumers are looking for cakes that are low in sugar, gluten-free, or keto-friendly due to health concerns associated with weight gain and allergic reactions. This trend has led to increased production of alternative sweeteners such as stevia, sucralose, acesulfame, or saccharine and alternative flours such as rice, tapioca, almond, or coconut flour.

While indulgent baked goods are still popular, there is a demand for healthier, snackable treats that are portion-controlled and made with wholesome ingredients. This includes gluten-free or keto-friendly baked goods.

Cake Market Opportunities

- Current market is valued at **USD 67.34 billion** as of 2024.
- Cake market is expected to grow at a compound annual rate (CAGR) of **3.0%** from 2024 to 2030.
- Novel current trends are surging due to the consumer's interest in healthier baked goods. Consumer surveys indicate that foods labeled "keto-friendly" appeal to those actively trying to limit their sugar and/or total carbohydrate intake.

"Cake Market Size & Share | Industry Report, 2020-2027 ". Grandviewresearch.com, 2024, https://www.grandviewresearch.com/industry-analysis/cakes-market.

TYPES OF CAKES AND CHARACTERSITICS

Cakes can be classified into different categories based on their formulation, ingredients, and processing technique. The following are some of the most popular types of cakes:

- **Birthday Cake:** typically baked in round or square shapes and decorated with frosting, candles, and other decorations to celebrate birthdays. They are made with high-ratio recipes.
- **Coffee Cake:** is typically made with spices and inclusions like cinnamon and dried fruit or nuts. It's perfect for serving with coffee or tea.
- **Muffins:** are small, individual cakes that are often served for breakfast or as a snack.
- **Cupcakes:** are small cakes that are baked in cupcake tins and decorated with frosting and other toppings.
- **Snack Cakes:** are typically pre-packaged cakes that are consumed as a snack or indulgence throughout the day. They are typically filled with cream and have a long shelf life. Examples include Twinkies and Ho Hos.
- **Frozen Cakes:** are typically made with ice cream or other frozen desserts and are perfect for serving in the summer.
- **Brownies:** a chocolate cake typically formed in a rectangular or square shape. They are characterized by their dense, fudgy texture and rich chocolate flavor. Brownies can have inclusions like nuts, chocolate, caramel, or toffee chips.
- **Cheesecake:** is a type of dessert cake made with a mixture of cream cheese, eggs, sugar, and other flavorings like vanilla or lemon juice. The filling is typically poured onto a crust made of crushed cookies or graham crackers and baked until set. Cheesecake can be served plain or topped with fruit, chocolate, or other sweet syrups.
- **Angel Food Cake:** is a chiffon cake that is made without any butter or oil. Instead, it is made with whipped egg whites for leavening, along with sugar, flour, and vanilla or almond extract for flavor. The final cake texture is light and fluffy, with a slightly sweet flavor. It can be served with fresh fruit or a light glaze.

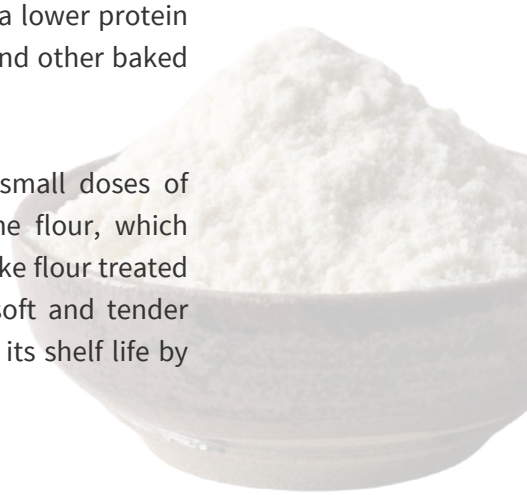
The characteristics (texture, flavor, taste, etc.) vary depending on the type of cake. Birthday cakes are typically sweet and moist, while coffee cakes are dense and nutty. Muffins are often served warm and are slightly sweet, while cupcakes are light and fluffy. Snack cakes are typically very sweet and high in calories.

CAKE INGREDIENTS

Ingredients used to make cakes play a crucial role in determining their texture, flavor, consistency, and overall quality. Some of the most common ingredients used in cake formulas include:

Cake Flour

Cake flour is a finely milled flour that is typically made from soft wheat. It has a lower protein content than all-purpose flour (<10%), which makes it ideal for making cakes and other baked goods that require a light and tender crumb.



Cake flour is often chlorinated, a process that involves treating flour with small doses of chlorine gas. This oxidizes some of the starch and protein molecules in the flour, which increases the acidity of the flour and increases its water absorption capacity. Cake flour treated by chlorination results in baked goods with a finer crumb structure plus a soft and tender texture. Chlorination can also help to increase the cake's volume and improve its shelf life by reducing the amount of moisture that the cake absorbs over time.

Sugar

Sugar is an essential ingredient in cake making. It provides sweetness and helps to create a moist and tender texture. It also aids in browning by providing a substrate for the Maillard reaction. In some cake types, it contributes to leavening due to the creaming step with butter. The sugar content in high-ratio cakes is higher than the flour content, usually at 55-60% total formulation weight. This affects the stability of the cake if the flour is not chlorinated or pre-gelatinized. Sugar provides the final product with a tender structure by decreasing starch gelatinization and water activity. 1

Fat

Fats play an important role in cake production. The most commonly used kinds are vegetable oils, margarine, butter, or shortening. The main contribution of fat in cakes is as a tenderizer by coating flour particles, restricting the formation of a gluten network. It also aids in moisturizing, flavor, and leavening in combination with sugar and color. Fat plays an important role in the crumb structure as cake stales. An increase in fat content would improve the texture of the cake to make it less crumbly, offering a longer shelf life.

Chemical Leavening

Chemical leavening agents such as baking powder and baking soda are often used in cakes to create a rise in carbon dioxide production. Chemical leavening systems are the key to high-quality products. The volume, density, cell structure, and texture of the baked goods are determined by the gas produced from the leavening system used in the formula. The speed of the reaction, or how fast the leavening system produces gas in batter, is affected by factors like acid type, temperature, water activity, and the type or ratio used. In industrial cake production settings, a leavening acid needs to be paired with a base for the processing step. Without the proper pairing, and understanding neutralizing values (NV), you may not obtain the best results.

Contact your chemical leavening provider to seek solutions that would prevent this.

Eggs

Eggs provide the foaming ability and structure of the cake. They act as binding agents, helping the cake set during baking. They also provide moisture which contributes to the softness and tenderness of the final product. Finally, eggs provide one of the subtracts that intervene in the Maillard browning reaction and may aid in leavening for some cake types.

Eggs can be replaced by common household ingredients such as applesauce, yogurt, or flax seed for vegan or allergy-friendly cake. A combination of several egg replacement ingredients or even the addition of emulsifiers are commonly used to substitute the variety of functions of eggs in cake systems. To replace liquid eggs with dry egg powder, read more on its moisture composition.

Eggs are such a traditional ingredient in many cake recipes that it can be hard to imagine baking without them. But a long history of fluctuating prices and, more recently, a series of supply crises are increasingly making eggs a target for replacement. Learn more about how you can use Nutrilac® egg replacement solutions from Arla Food Ingredients in your cake products here.

Emulsifiers

Emulsifiers like lecithin and mono- and diglycerides are often added to cakes to improve their texture and extend their shelf life. The ones most commonly used in cake manufacturing are:

- **Propylene Glycol Monoesters (PGME):** are emulsifiers used in the baking industry to stabilize water-in-oil systems due to their capacity to form a crystalline film capable of preventing the coalescence of dispersed droplets.
- **Polyglycerol Esters (PGE):** are emulsifiers used in the baking industry to reduce the interfacial tension between different ingredients present in cake batters. They are commonly used in cake batters with low or no fat content to aid in the stabilization of the foam that provides structure.
- **Polysorbate 60:** are emulsifiers used to improve the crumb color and strength, improve volume, and increase product shelf life. The number 60 represents the fatty acid associated with the polyoxyethylene sorbitan component of the molecule. A higher number indicates a higher lipophilic property.
- **Alpha Cyclodextrins (α-CD):** are hexasaccharides derived from glucose that is commonly used as an emulsifier and stabilizer in the baking industry (e.g. icings, cake batter, and sponge cakes). They aid in the stabilization of oil-in-water emulsions, controlling the solubility of insoluble liquids, and stabilizing and protecting compounds from light and heat oxidation.

FROSTING AND ICINGS

One of the most common additions to cake is frosting or icing. This serves two main functions: adding a novel flavor and texture to accompany the baked good and as a form of decoration.

Several types of frosting and icing are commercially available:

BUTTERCREAM FROSTING

It is one of the most popular frostings commonly used for cakes and cupcakes. It is made with butter, powdered sugar, and milk or cream, and can be flavored in many different ways by adding cocoa powder, vanilla extract, or other essences. Depending on the technique used, there are several types of buttercream frosting (e.g., American, Italian, etc.).

CREAM CHEESE FROSTING

This frosting is similar to buttercream but it has a tangy flavor from the cream cheese. It is commonly used on carrot cakes and red velvet cakes.

GANACHE

It is made by melting chocolate and mixing it with heavy cream. It can be used as a frosting or a glaze, depending on the final consistency.

ROYAL ICING

It is a hard, white icing made from powdered sugar and egg whites. It is often used for decorating cakes an making intricate designs. It can be colored with a wide variety of artificial or natural coloring.

FONDANT

It is a thick, pliable icing that is often used to cover cakes. It can be flavored and colored, and it's most commonly used for intricate designs.

WHIPPED CREAM

It is made by whipping heavy cream and adding sugar and vanilla extract. It is light and fluffy and is often used on fruit cakes or in combination with other frostings.

Due to the nature of frostings and icings as emulsions, the appropriate combination of ingredients as well as the right processing conditions and procedure must be taken into account to obtain a quality final product. In some cases, the use of icing stabilizers may be required for the final product's optimum quality.

Icing stabilizers are food additives that provide foam or emulsion stability, elasticity, and anti-sticking or setting properties. They are commonly produced from hydrocolloids, gums, polyglycerols esters, fatty acids, sorbates and other emulsifiers. Some of the most commonly used ones are agar, guar gum, locust bean gum, carrageenan, or arabic gum.

6 Reasons why icing stabilizers work

1. **Prevents sugar crystallization**
2. **Prevents syneresis**
3. **Improves icing structure, rheology and setting**
4. **Enhances gelling properties**
5. **Emulsifies icing ingredients**
6. **Enhances glaze surface**

CAKE FORMULATION

Formulation

Developing a cake formula involves carefully selecting ingredients and determining the appropriate ratios and baking times. It is important to consider the cake type to be formulated and other factors such as flavor, texture, and shelf life when creating a recipe.

Some common cake formulations can be seen in the following table:

Ingredient	Angel Food Cake	White Cake	Sponge Cake
Flour	15.7%	19.7%	33.7%
Sugar	41.7%	29.5%	26.9%
Fat	0%	13.8%	3.5%
Egg	0%	0%	16.8%
Egg whites	41.9%	35.4%	0%
Egg yolks	0%	0%	16.8%
Baking Powder	0%	1.3%	2.0%
Tartaric acid	0.3%	0%	0%
Vanilla	0.4%	0.3%	0.3%

Table 1. Different types of cakes formulation in total percentage.

Substituting Traditional Ingredients with Keto-Friendly Options

To make a cake recipe more keto-friendly, traditional ingredients like sugar and flour can be replaced with low-carb alternatives such as the following:

Keto Substitutions

Wheat flour alternatives: flours made from chia, almond, oat, coconut, and others, along with suitable hydrocolloids.

Native starch alternatives: resistant starch, oat fiber, inulin, and psyllium husks.

Alternative sweeteners: Sweeteners, in combination with bulking agents, aid in substituting sugar. Commonly used sweeteners are stevia, sucralose, erythritol, and allulose, among others.

Some considerations need to be taken into account when substituting wheat flour and sugar with keto alternatives.

Due to the reliance cakes have on starch for structure, cake batter viscosity can be improved by controlling the amount of fiber added. Formulation modifications, such as proper fat phase stabilization, may aid in tenderizing the cake in the absence of sucrose. Lower baking temperatures and longer baking times can help remove excessive water content.

Some common recommendations when producing keto products:

- **Avoid the contamination of egg whites with fats to reduce potential breakdown of the foam.**
- **Thermal analysis can help with understanding the effect of high fiber addition on the water holding capacity and structural properties of the final product.**

Egg Replacement

Replacing eggs in a formula requires a good understanding of their functionality in baked systems. A few key ones are:

- **Foaming:** important for the formation of air cells in batters.
- **Coagulation:** heat setting and structure forming.
- **Emulsification:** important for consistency and uniformity of cells.
- **Stabilization:** essential for firmness and springiness.
- **Moistening: i**mportant for the sensory perception in cakes, cookies, and waffles.
- **Color:** natural yellow hue and contribution to Maillard browning reaction.

It is important to note that each egg replacement can affect the texture and flavor of the cake, so it may require some experimentation to find the best substitute for a particular recipe. A combination of several substitutes may be required to accomplish the overall performance of eggs' function in cake systems.

The addition of other ingredients, such as emulsifiers, may be required to aid in the substitution of eggs' unique function.

EGG REPLACERS

A wide variety of egg replacement formulations and natural alternatives are available in the bakery industry. Some of the most commonly used ones with their potential uses and substitution strategies are shown in the following table:

Replacer	Substitution	Use
Yogurt	Use 1/4 cup of applesauce for each egg.	This works well in cakes that have a denser texture, such as spice cakes or carrot cakes.
Bioalbumen®	Similar quantities to regular egg white.	Works well in cakes as a substitute of egg white due to its Ovalbumin protein synthesized by precision fermentation
Vinegar and baking powder	A mixture of 1 tablespoon of vinegar and 1 teaspoon of baking powder can be used as a substitute for eggs in cakes.	This works well in cakes that have a light and airy texture, such as sponge cakes.
Chia protein	Provides similar emulsifying capacities to eggs when used at 25% level.	It can be use to substitute egg or butter, but should only substitute one of them at a time. It can be used for egg white leavening replacement.
Natural colors	Use accordingly to the color hue desired.	Lycopene, annatto, turmeric and paprika extracts can be used to substitute the yellow hue provided by egg yolk.
Flaxseed	Typically 1 egg is substituted by 1 tablespoon of flaxseed meal with 3 tablespoons of water.	Provides humectancy and binding capacity.
Fruit pureés	Applesauce and mashed banana: Use 1/4 cup of applesauce for each egg.	Banana puree and applesauce provide some biding and humectancy capacity.
Vegetable oils	Used as required to cover baked goods.	Used to replace egg wash to provide glow to baked goods.
Whey protein	2% Whey protein concentrate powder of formulation	• Aids in foam stability and volume. • Increases viscosity and aids in air retention • Less sugar should be used

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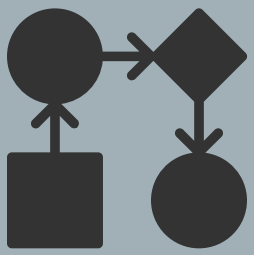
CAKE PROCESSING

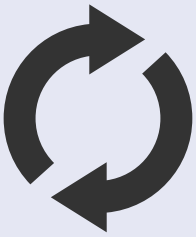
Industrial cake production can be performed through several methods. The most common ones are:

MULTISTAGE MIXING PROCESS

This process involves mixing the dry ingredients and liquid ingredients separately before combining them together. The dry ingredients are mixed together in one bowl, and the liquid ingredients are mixed in another bowl. The two mixtures are then combined and mixed until a homogenous mass is obtained. This method is used for high-quality cakes with a fine texture, such as sponge cakes or genoise cakes.



CONTINOUS MIXING PROCESS

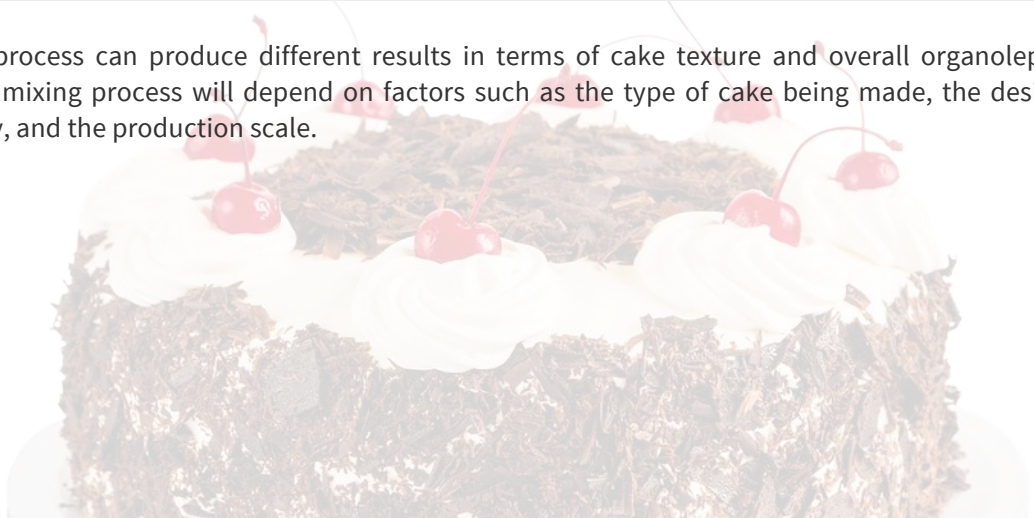


This process involves continuously mixing the ingredients together in a machine that has a continuous feed. The ingredients are fed into the machine at one end, and the mixed batter is continuously discharged at the other end. This method is used for making large quantities of cake batter for commercial purposes, as is the case for bakeries and food manufacturing companies.

SINGLE STEP MIXING PROCESS

This process involves mixing all the ingredients together in one bowl at the same time. This method is used for making cakes quickly and efficiently, such as sheet cakes or layer cakes.

Each mixing process can produce different results in terms of cake texture and overall organoleptic quality. The choice of the mixing process will depend on factors such as the type of cake being made, the desired texture and overall quality, and the production scale.



Processing Tips

Some common cake making tips can be seen in the following table:

Problem	Reason	Solution
Tunneling	• Overmixing produces too much gluten	• Do not overmix • Use soft flours (low protein content) • Increase tenderizers, such as fats and sugar
Crowned tops	• Oven temperature is too high • Overmixing • Cake pan is too small	• Lower oven temperature • Mix batter until ingredients are just combined • Use larger cake pan or divide batter in several cake pans
Wrinkled tops	• Underbaking • Temperature changes during baking • Cooling too quickly	• Check cake temperature - time combination • Avoid sudden changes of temperature during baking (e.g opening oven door) • Allow the cake to cool for 10 - 15 min before releasing from pan
Heavy and dense cake	• Not enough leavening agent • Too much sugar or fat • Overmixing	• Increase leavening agent content • Reduce sugar and fat in the cake formulation • Mixed ingredients until just combined
Dry and crumbly	• Overbaking • Not enough fat and sugar • Too much flour	• Verify time - temperature combination for the formulation, reduce if necessary • Add more eggs or use emulsifiers • Verify cake formulation and measure ingredients accordingly

Table 3. Cake processing tips.

LEVAIR® Select, a non-aluminum leavening solution, performs similarly to SALP and aids commercial bakeries seeking to reduce aluminum in baked products in order to comply with regulations or changing customer preferences. This solution not only provides an alternative to navigate today's regulatory hurdles, but offers a versatile solution that support bench, floor, and line tolerance and results in a finished product the provides similar resilient crumb structure and volume to SALP. Learn more.

TROUBLESHOOTING CAKE PRODUCTION

How can I keep the texture of my cake soft and resilient for up to 3 months without mold?

To maintain cake texture over a long period of shelf life, several considerations should be taken into account.

1. Ingredients: cake flour is recommended due to its lower protein content avoiding the toughening of the crumb. An increase of fat aids in the lubrication of the cake, improving cake moisture and texture.

2. Chemical leavening: for better volume products, the choice of a slow acting or fast acting chemical leavening system affects the volume of the product. The higher the volume, the softer the product, and the softer it will remain over shelf life.

3. Emulsifiers: the use of emulsifiers improves the batter stability, avoiding the collapse of the bakery system during baking. It also contributes to crumb softening and the extension of shelf life by reducing the rate of starch retrogradation. Common emulsifiers used in cakes are Propylene glycol mono esters (PGME), mono and diglycerides, Polysorbates, and sorbitan esters.

4. Enzymes: the addition of enzymes such as amylase or anti-stalling enzymes improve crumb softness by increasing volume and preventing staling. Enzymes are commonly used in a range of 0.005–0.01% (50–100 ppm based on flour weight).

5. Cooling: Cool to an internal temperature of 90°F (32.2°C), not according to time. Do not leave cakes out to cool for too long, or mold spores will collect on them.

6. Sanitation: follow GMP, HACCP and FSMA kill step implementation. Thoroughly clean surfaces and use gloves.

7. Preservatives: Mold is a big issue due to the high water activity of certain cakes. A few ingredients to consider are potassium sorbate, sorbic acid, cultured wheat, rowanberry and cinnamon extracts.

What are characteristics of a good sponge cake?

Sponge cakes are a type of foam cake. They are characterized by their formulation, which consists of egg yolks, granulated sugar, egg whites and flour, and by their mixing method. A batter and a foam are made separately to obtain the maximum volume. Subsequently, the foam is carefully folded into the egg yolks and liquid mixture.

Sponge cakes are characterized by their rich flavor and by their soft, resilient and fluffy texture. Its characteristic texture is associated by its specific gravity. A cake's specific gravity is the ratio of the mass of cake batter in a known volume compared to the mass of water in said volume. Typical values of specific gravity for sponge-type cakes are 0.30-0.50. Lower volumes of specific gravity indicates a high amount of air has been incorporated into the batter.

Why is my cake batter white, but the crumb becomes yellow after baking?

Unaerated batters are markedly darker than their aerated counterparts, thanks to air incorporation during mixing. The higher the amount of air a batter incorporates, the lighter in color it becomes and the less dense it gets. Baked goods also undergo a wide variety of chemical reactions when baking due to the high temperatures used. One of the most famously known is the browning Maillard reaction. This reaction occurs when a protein source (e.g., eggs) and reducing sugar are heated. This reaction produces a coloration on the surface and the crumb of the baked good and thus produces the perceived color change.

Lastly, check on your chemical leavening system. A system that has unreacted sodium bicarbonate would result in a more yellow and dark crumb.

What are good alternative sweeteners for keto cake products?

Several alternative sweeteners can be used in keto baking. Examples include stevia (liquid or powder), erythritol, monk sugar, allulose or xylitol. Both xylitol and erythritol are bulk sweeteners and can be replaced 1:1 to sucrose. However, these sweeteners are very potent and have a lingering effect. Allulose, for its part, has the best browning property of all alternative sweeteners.

What is the cause of staling in my cake?

The inter-bonding of starch molecules causes staling in cakes. High sugar ingredients, emulsifiers, and fats prevent this bonding. Water evaporation increases the space between starch molecules, sugars, and emulsifiers, so they have a stronger bond. Therefore, moisture driven out of this system is the leading cause of staling.

Baking at higher temperatures reduces specific volume—the ratio of cake volume to weight. A better emulsification and processing system can further achieve higher volumes that reduces the rate of staling.

Over baking causes increased bake out, which dries out your cake and enhances staling. To prevent this, use thermal profiling to determine the adequate baking time for your cakes. The use of a cake thermal profiler can aid the baking step by giving the specific time/temperature combination to obtain the desired product by baking out the adequate amount of water.

QUALITY ASSURANCE FOR CAKE PRODUCTS

Some of the most important cake quality assurance parameters are:

pH: influences the rate of reaction for the chemical leavening agents. Texture and gluten behavior is also influenced by batter pH. A higher pH tends to favor the browning Maillard reaction. Final pH affects the microbial stability of the product (e.g., mold growth). The typical pH of a classic cake lies between 6.0-7.0.

Specific Gravity: is measure of the air added to the cake batter that aids manufacturers in the determination of the batter density. A cake specific gravity can be measured through a simple method that consists in weighing the batter in a container and dividing that value by weight of water in the same container.

Damaged Starch: is a parameter used to assess the quality of flour. It represents the amount of the kernel starch that has been physically broken or fragment during milling. Damaged starch affects the flour water absorption capacity. This parameter can be measured by instrumental methods such as the SDmatic.

Moisture Content: is the water content of the product. It affects the shelf life and sensorial acceptability of finished products. Moisture content is commonly measured by a direct method of evaporation (e.g., convection oven, vacuum, microwave ovens) or by indirect methods (e.g., spectroscopy or thermogravimetry).

Water Activity: it determines the microbial and chemical stability of the product and impacts the staling rate of the cake.

Texture: a wide variety of sub parameters define cake texture, among the most relevant are hardness, cohesiveness, springiness, and resilience. Texture can be measured with a trained sensory panel or by instrumental methods like texture profile analysis (TPA).

Cake Volume: associated with the lightness and fluffiness of the cake. It can be measured through instrumental methods like C-Cell.

Cell Structure: considering number of cells, cell diameters, cell volume, cell elongations, among others. It can be measured through instrumental methods like C-Cell.

Color: produced during the baking process due to the browning reactions, affects acceptability of the product. It can be measured through instrumental methods like C-Cell or by trained sensory panels.

Inclusions: (such as fruit or chocolate chips) can be quantified to provide information about evenness of distribution within the slice.

NOVEL CAKE TRENDS

Clean-Label Cake

The clean label trend has grown in popularity and scope with consumers' health concerns due to the over-processing of food products. Clean label cakes use a simple, natural ingredient list, skipping ingredients like bleached flour, aluminum-based phosphates or artificial ingredients. The following table has a clean label cake formula:

Ingredient	Clean Label Yellow Cake (%)
Butter	14.06%
Sugar	28.95%
Salt	0.17%
Egg	9.93%
GMO - Free Sunflower Lecithin	0.5%
Water	19.85%
Heated- treated Cake Flour	24.81%
Baking Powder	0.83%
Rowanberry Extract	0.91%

Table 4. Clean label cake formulation.

Keto Cake

Keto cakes are based on the substitution of flour and sucrose with alternatives such as almond or coconut flour and alternative sweeteners such as acesulfame, stevia or erythritol. A typical formulation can be seen in the following table:

Ingredient	Keto Cake
Almond Flour	10.81%
Coconut Flour	5.85%
Salt	0.32%
Baking Powder	0.22%
Eggs	33.77%
Butter	12.61%
Alternative Sweetener	8.44%
Almond Milk	27.02%
Vanilla	0.96%

Table 5. Keto cake formulation.

Gluten-Free Cake

This trend originated due to the increasing diagnosis of celiac patients around the world, and the need to produce bakery products that are safe and tasty for them.

Ingredient	Gluten-free Chocolate Cake	Gluten-free Yellow Cake
Pea Protein	13.26	14.19
Chia Protein	1.66	1.77
Sweet White sorghum flour	1.66	1.77
Sea Salt	0.33	0.35
Baking Powder	0.66	0.71
Hydroxypropyl methylcellulose (HPMC)	0.25	0.27
Sodium carboxymethylcellulose	0.25	0.27
Carboxy methylcellulose (CMC)	0.08	0.13
Sunflower lecithin	0.33	0.35
Granulated sugar	29.00	29.27
Cocoa Powder 22%	5.80	-
Unsalted Butter	11.60	13.30
Vanilla Bean Paste	0.83	0.89
Whole Eggs	15.24	16.32
Whole Milk	19.06	20.40

Table 6 . Gluten-free cake formulation.

Other Cake Trends

In recent years several cake trends have emerged, most of them associated with new techniques and styles of decoration. Among them, the most commonly talked about are meringue cakes or pavlovas, cream tart cakes, mirror glaze cakes, geode cakes, floral cakes, naked cakes, fault line cakes, whipped cream cakes and character cakes.

International desserts that could be considered cakes, such as Belgian waffles, tres leches cake, mochi, and lamingtons are increasing their presence in other countries due to the interest of consumers in expanding their gastronomic experiences.

SUMMARY

Recent cake trends have been developed due to the need of consumers for healthier and novel alternatives for traditional cakes. This has caused a significant increase in the formulation of keto, clean label products with the substitution of traditional wheat flour. Substitution of wheat flour in cakes has a significant impact on the final product due to the importance of flour in cake formulation. However, recent advances in research and development have resulted in products with similar organoleptic characteristics to the original product with better nutritional profiles.

These newer trends represent both challenges and opportunities for current and future bakers around the world in their quest to provide flavorful, healthier and pleasing baked products for their consumers.

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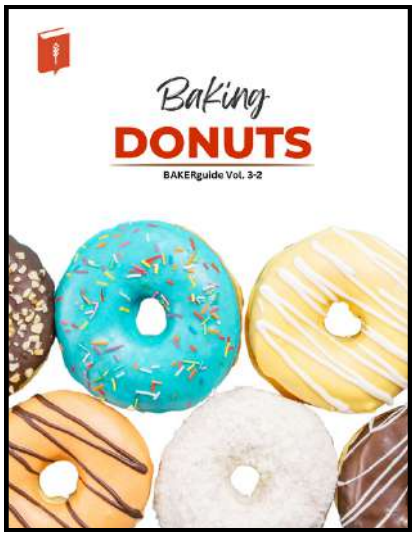

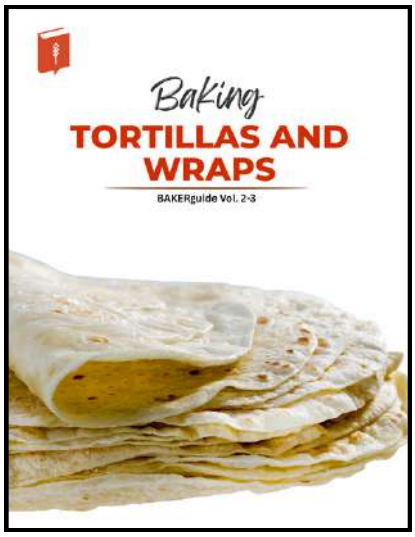

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