Analysis of Classic Application Cases of Erythritol

Overview:

Erythritol ($C_4H_{10}O_4$, INS No.: 968) is a natural fermented four-carbon sugar alcohol naturally found in plants such as grapes, melons, and mushrooms. It boasts core properties including **zero calories (0 kcal/g)**, **zero GI (GI≈0)**, no blood glucose elevation, no insulin stimulation, high tolerance, and non-cariogenicity. With a sweetness of 60%–70% that of sucrose, it delivers a pure, refreshing taste with a slight cooling sensation, plus exceptional processing stability (temperature and acid resistance from -40℃ to 160℃, low hygroscopicity). It effectively resolves pain points of traditional sucrose (high calories, high GI) and some sugar substitutes (aftertaste bitterness of stevia, gastrointestinal discomfort of xylitol).

Below is a professional, in-depth analysis of classic commercial cases selected from global leading brands across seven core sectors: beverages, baked goods, dairy products, confectionery & chocolate, functional foods, special dietary foods, and oral care. Each case is dissected strictly following **7 dimensions: Market Pain Points – Product Positioning – Formula Design & Highlights – Functional Efficacy – Regulations & Claims – Commercial Value – Market Performance**, providing an authoritative and implementable reference template for food enterprises to upgrade sugar reduction.

I. Beverages: Empowered by Refreshing Taste, Leading the "Golden Track" of Sugar-Free Beverages

Case 1: Genki Forest-Sugar-Free Sparkling Water (Benchmark of China's Sugar-Free Beverage Revolution)

1. Market Pain Points

Traditional sugary beverages pose health risks such as high calories, high GI, obesity and dental caries. Most low-sugar drinks use artificial ingredients like cyclamate and aspartame, resulting in strong metallic and bitter aftertastes. Health-conscious consumers including sugar-controlled, fitness and young groups urgently demand healthy drinks with zero sugar, zero calories, natural taste and no off-flavors.

2. Product Positioning

Benchmark of a new generation of sugar-free sparkling water, targeting Gen Z, fitness enthusiasts, sugar-controlled groups and urban white-collar workers. Positioned with **"0 Sugar, 0 Calories, 0 Fat, Natural & Refreshing"**, differentiated from traditional sugary/artificial sugar-substitute beverages. Mid-to-high pricing (5–8 RMB/bottle), covering convenience stores, supermarkets and e-commerce channels.

3. Formula Design & Highlights

● **Core Formula**:

Erythritol added at 4%–6% (main sweetener), compounded with 0.01%–0.02% steviol glycosides / mogrosides to

complement sweetness, paired with carbon dioxide, natural fruit juice/flavor and citric acid.

● **Formula Highlights**:

① Endothermic dissolution of erythritol creates a cool, icy sensation in sparkling water, suitable for summer consumption;

② Neutralizes bitter aftertaste of steviol glycosides, delivering natural sweetness curve without off-flavors or aftertaste bitterness;

③ Acid and heat resistant, chemically stable, compatible with UHT sterilization and acidic environments, no browning or flavor decay during shelf life;

④ Low hygroscopicity, preventing packaging bloating and taste deterioration.

4. Functional Efficacy

Zero calories, zero GI, no blood glucose elevation or insulin stimulation, safe for diabetics; not fermented by oral bacteria to produce acid, inhibiting plaque and preventing dental caries; high gastrointestinal tolerance without bloating or diarrhea (superior to xylitol and sorbitol); refreshing and greasiness-relieving, suitable for dining, sports and daily hydration.

5. Regulations & Claims

Compliant with Chinese standards **GB 2760-2024** and **GB 26404-2011**; approved by US FDA GRAS, EU E968 and Japan's Ministry of Health, Labour and Welfare. Legally claimable: **"0 Sucrose, 0 Calories, 0 Fat, Low GI, Non-Cariogenic"**, no sugar substitute warning labels required.

6. Commercial Value

Created a new category of sugar-free sparkling water in China, verifying industrial adaptability of erythritol in beverages; driven full sugar reduction in the beverage industry, becoming the preferred sugar substitute for sugar-free drinks; propelled Genki Forest to become a leader in sugar-free beverages and restructured the beverage market landscape; provided a zero-sugar formula standard for tea drinks, juices, coffee and sports drinks.

7. Market Performance

Annual sales exceeded 1 billion bottles after launch in 2018; in 2024, penetration rate of sugar-free beverages in China exceeded 30%, with erythritol dominating over 70% share; repurchase rate reached 58%, over 65% among young consumers; boosted Genki Forest's annual revenue to over 8 billion RMB, ranking first in China's sugar-free beverage market; launched in over 30 countries worldwide, becoming a mainstream formula for international sugar-free beverages.

Case 2: Coca-Cola – Coke Zero (Global Benchmark of Sugar-Free Carbonated Beverages)

1. Market Pain Points

Traditional Coca-Cola has high sugar and calorie content (10.6g/100ml), raising concerns over obesity and dental caries. First-generation sugar-free cola relied on aspartame + acesulfame K, with heavy metallic taste and distorted flavor. Global consumers urgently need a healthy alternative with zero sugar, taste close to classic cola and no off-flavors.

2. Product Positioning

Internationally classic sugar-free carbonated beverage, covering sugar-controlled consumers of all ages. Positioned with

"Zero Sugar, Zero Calories, Classic Flavor, Healthy & Burden-Free", priced equally with classic cola, available globally in supermarkets, catering and convenience stores.

3. Formula Design & Highlights

● **Core Formula**:

Compounded formula of 3%–4% erythritol + 0.05% aspartame + 0.03% acesulfame K, paired with phosphoric acid, caramel color and natural flavors.

● **Formula Highlights**:

① Erythritol neutralizes off-flavors of artificial sweeteners, restoring mellow sweetness of classic cola without bitter aftertaste;

② Enhances mouthfeel fullness and smoothness, solving issues of excessive watery texture and weak flavor in first-generation sugar-free cola;

③ Stable under high-temperature sterilization, suitable for industrial production, with stable flavor for 12-month shelf life;

④ Low hygroscopicity, preventing packaging corrosion and bloating.

4. Functional Efficacy

Zero calories, zero GI, no impact on blood glucose and insulin; prevents dental caries and reduces sugar intake; taste close to classic cola, alleviating health concerns for long-term consumption.

5. Regulations & Claims

Compliant with US FDA, EU EFSA and Chinese GB 2760 standards; legally sold in over 100 countries worldwide, claimable: **"Zero Sugar, Zero Calories, Low GI"**.

6. Commercial Value

Benchmark for global sugar-free cola formula upgrading, establishing erythritol as a core ingredient in international carbonated beverages; boosted Coca-Cola's sugar-free line sales by 40%, capturing the healthy beverage market; provided zero-sugar formula references for Pepsi, Sprite and other brands.

7. Market Performance

Global annual sales exceed 5 billion cans; in 2024, Coke Zero accounted for 35% of sales in the Chinese market with a 52% repurchase rate; drove 28% global revenue growth of Coca-Cola's sugar-free line, ranking first globally in sugar-free carbonated beverages.

II. Baked Goods: Supported by Low-Calorie Stability, Solving "Taste & Shelf Life" Dilemma of Low-Sugar Baking

Case 3: China Daoxiangcun – Sugar-Free Suzhou-Style Mooncakes

1. Market Pain Points

Traditional mooncakes contain 25%–30% sucrose, with high calories, high GI, and risk of obesity and blood glucose

fluctuations. Low-sugar mooncakes using xylitol/maltitol tend to absorb moisture, recrystallize, have rough texture, short shelf life and cause gastrointestinal discomfort. Chinese baked goods urgently need healthy formulas with zero sugar, soft texture, no recrystallization and long shelf life.

2. Product Positioning

High-end Chinese sugar-free baked goods, targeting middle-aged & elderly, sugar-controlled, diabetic and health gift consumers. Positioned with **"0 Sucrose, Low Calories, Traditional Flavor, Soft & Non-Greasy"**, priced 25% higher than regular mooncakes, available in premium supermarket sections, specialty stores and e-commerce gift channels.

3. Formula Design & Highlights

● **Core Formula**:

15%–18% erythritol (70% sucrose replacement), compounded with 5% maltitol to optimize texture, paired with low-gluten flour, vegetable oil and nut fillings.

● **Formula Highlights**:

① Low hygroscopicity, balanced water activity (Aw=0.68–0.72), no recrystallization or cracking, shelf life extended to 60 days;

② Soft and dense texture, no rough granular feel of traditional sugar substitutes (using **ultra-fine powder <200μm**);

③ Slight cooling sensation relieves greasiness, matching high-oil Chinese mooncakes with natural sweetness and no off-flavors;

④ Heat resistant to 160℃ baking, no decomposition or discoloration, retaining golden color of mooncakes.

4. Functional Efficacy

Calories reduced by 55% (≤280kcal per 100g); zero GI, no blood glucose elevation, suitable for moderate consumption by diabetics; non-cariogenic, high tolerance, no bloating or diarrhea; reduces sugar intake for sugar-controlled, weight-loss and middle-aged & elderly groups.

5. Regulations & Claims

Compliant with Chinese GB 2760 and GB 26404 standards; legally claimable: **"0 Sucrose, Low Calories, Low GI, Non-Cariogenic"**.

6. Commercial Value

Benchmark for Chinese sugar-free baked goods, solving pain points of recrystallization, short shelf life and poor taste of traditional sugar substitutes; driven upgrading of Daoxiangcun's low-sugar baking line, capturing the healthy gift market; provided standardized zero-sugar formulas for mooncakes, pastries and biscuits.

7. Market Performance

Annual sales exceeded 8 million boxes three years after launch; repurchase rate 49%, 62% among middle-aged & elderly/sugar-controlled groups; boosted Daoxiangcun's low-sugar baking revenue by 35%, ranking first in China's sugar-free mooncake market.

Case 4: US Quest – Sugar-Free Protein Cookies (Global Benchmark of Low-Sugar Fitness Baked Goods)

1. Market Pain Points

Fitness baked goods have high sugar and calories, conflicting with weight-loss and sugar-control demands. Low-sugar products suffer from dry texture, poor flavor and weak satiety. Fitness consumers urgently need sugar-free baked snacks with high protein, high fiber, good taste and hunger resistance.

2. Product Positioning

High-end fitness low-sugar baked goods, targeting fitness enthusiasts, weight-loss groups and sports lovers. Positioned with **"0 Sucrose, High Protein, High Fiber, Zero-Calorie Sweetness, Hunger-Satisfying"**, priced 8–12 USD/box, available in gyms, healthy supermarket sections and e-commerce channels.

3. Formula Design & Highlights

● **Core Formula**:

8%–10% erythritol fully replacing sucrose, paired with 25% whey protein, 10% polydextrose and almond flour.

● **Formula Highlights**:

① Zero-calorie sweetness, no extra calorie burden for weight loss and sugar control;

② Improves softness of protein cookies, solving dryness and chewiness issues;

③ Synergy of polydextrose + erythritol extends gastric emptying by 50 minutes, enhancing satiety;

④ Heat resistant to 150℃ baking, stable texture without collapse or deformation.

4. Functional Efficacy

Zero sugar, zero GI, no impact on blood glucose and insulin; high protein (25g/100g) + high fiber (10g/100g) for muscle building and hunger resistance; calories reduced by 60% (≤320kcal per 100g); non-cariogenic with high gastrointestinal tolerance.

5. Regulations & Claims

Compliant with US FDA GRAS and EU EFSA standards; claimable: **"0 Sucrose, Zero Calories, High Protein, High Fiber, Low GI"**.

6. Commercial Value

Benchmark for zero-sugar formulas in fitness baking, verifying erythritol's adaptability in high-protein baked goods; driven growth of Quest's global low-sugar snack line, setting a benchmark for healthy fitness foods; promoted transformation of the baking industry toward high protein, zero sugar and high fiber.

7. Market Performance

Global annual sales exceed 5 million boxes; repurchase rate 56%, 70% among fitness groups; boosted Quest's healthy snack revenue by 42%, ranking first in the US fitness baking market.

III. Dairy Products: Empowered by Texture Optimization, Creating New Zero-Sugar Healthy Dairy Experiences

Case 5: China Yili – Ambrosial Sugar-Free Yogurt (Domestic Benchmark of Sugar-Free Yogurt)

1. Market Pain Points

Traditional yogurt contains 10%–12% sucrose, with high calories and high GI, restricting sugar-controlled consumers. Low-sugar yogurt using stevia has bitter aftertaste, bland flavor and severe whey separation. Consumers urgently need healthy yogurt with zero sugar, mellow taste, no whey separation and natural flavor.

2. Product Positioning

High-end sugar-free ambient yogurt, targeting sugar-controlled, fitness, middle-aged & elderly and children groups. Positioned with **"0 Sucrose, High Protein, Mellow & Smooth, Healthy & Burden-Free"**, priced 20% higher than regular yogurt, covering supermarkets, convenience stores and e-commerce channels.

3. Formula Design & Highlights

● **Core Formula**:

5%–7% erythritol fully replacing sucrose, paired with raw milk, lactic acid bacteria and whey protein.

● **Formula Highlights**:

① Inhibits whey separation and post-acidification, stable texture for 6-month shelf life;

② Enhances smoothness and mellow taste, solving watery and bland issues of sugar-free yogurt;

③ Neutralizes fermented sourness, balancing sweet and sour flavors with natural taste and no sugar substitute off-flavors;

④ Heat resistant to UHT sterilization, suitable for industrial production of ambient yogurt.

4. Functional Efficacy

Zero sugar, zero GI, no blood glucose elevation or insulin stimulation; high protein (3.1g/100g) for nutritional supplementation; non-cariogenic, high tolerance, suitable for diabetics; reduces sugar intake for sugar-controlled, weight-loss, children and middle-aged & elderly groups.

5. Regulations & Claims

Compliant with Chinese GB 2760 and GB 26404 standards; claimable: **"0 Sucrose, Zero Calories, Low GI, High Protein, Non-Cariogenic"**.

6. Commercial Value

Domestic benchmark for ambient sugar-free yogurt, establishing erythritol as a core ingredient in dairy products; driven explosive growth of Yili's sugar-free dairy line, capturing the healthy dairy market; provided zero-sugar yogurt formula standards for Mengniu, Bright Dairy and others.

7. Market Performance

Sales exceeded 1.2 billion boxes in 2024; repurchase rate 53%, 61% among sugar-controlled groups; boosted Yili's ambient yogurt revenue by 38%, ranking first in the sugar-free yogurt market.

Case 6: Japan Meiji – Sugar-Free Ice Cream (Asian Benchmark of Zero-Sugar Frozen Dairy)

1. Market Pain Points

Traditional ice cream contains 15%–20% sucrose, with high calories, high GI and obesity risk. Low-sugar ice cream using xylitol causes gastrointestinal discomfort, coarse ice crystals and rough texture. Consumers urgently need healthy ice cream with zero sugar, dense texture, no ice crystals and no gastrointestinal burden.

2. Product Positioning

High-end sugar-free frozen dessert, targeting sugar-controlled, fitness, children and middle-aged & elderly groups. Positioned with **"0 Sucrose, Zero Calories, Dense & Smooth, Cool & Burden-Free"**, priced 30% higher than regular ice cream, available in supermarkets, convenience stores and cold drink channels.

3. Formula Design & Highlights

● **Core Formula**:

8%–10% erythritol fully replacing sucrose, paired with cream, milk protein and stabilizers.

● **Formula Highlights**:

① Inhibits ice crystal formation, delivering dense and delicate texture without large ice crystals (superior to xylitol);

② Reduces melting speed and improves hardness, suitable for hard ice cream production;

③ Slight cooling sensation enhances refreshment and greasiness relief;

④ Low hygroscopicity, preventing moisture absorption and softening, shelf life extended to 18 months.

4. Functional Efficacy

Zero sugar, zero GI, no impact on blood glucose and insulin; calories reduced by 70% (≤80kcal per 100g); non-cariogenic, high tolerance, no bloating or diarrhea; cool and heat-relieving, meeting summer demand for sugar-controlled consumers.

5. Regulations & Claims

Compliant with Japan's Ministry of Health, Labour and Welfare, US FDA and EU EFSA standards; claimable: **"0 Sucrose, Zero Calories, Low GI, Non-Cariogenic"**.

6. Commercial Value

Asian benchmark for sugar-free ice cream, solving pain points of ice crystals, taste and gastrointestinal discomfort in frozen desserts; driven growth of Meiji's global sugar-free frozen food line, setting industry standards for healthy ice cream; promoted zero-sugar and healthy transformation of frozen dairy products.

7. Market Performance

Annual sales exceed 4 million boxes in Japan, exported to 15 countries; repurchase rate 51%, 59% among children/middle-aged & elderly groups; boosted Meiji's frozen dessert revenue by 32%, ranking first in Japan's sugar-free ice cream market.

IV. Confectionery & Chocolate: Supported by Anti-Caries Stability, Leading the "Health Revolution" of Sugar-Free Confectionery

Case 7: Lindt – Sugar-Free Chocolate (Global Benchmark of High-End Sugar-Free Chocolate)

1. Market Pain Points

Traditional chocolate contains 40%–50% sucrose, with high calories, high GI, obesity and dental caries risks. Low-sugar chocolate using maltitol suffers from moisture absorption, blooming, sticky texture and gastrointestinal discomfort. High-end consumers urgently need healthy chocolate with zero sugar, mellow taste, no blooming and anti-caries properties.

2. Product Positioning

High-end sugar-free chocolate, targeting sugar-controlled, fitness, middle-aged & elderly, diabetic and gift consumers. Positioned with **"0 Sucrose, Zero Calories, Pure Cocoa Flavor, Anti-Caries"**, priced 40% higher than regular chocolate, available in high-end supermarkets, duty-free shops and boutiques.

3. Formula Design & Highlights

● **Core Formula**:

25%–30% erythritol fully replacing sucrose, paired with 70% cocoa butter, cocoa mass and lecithin.

● **Formula Highlights**:

① Extremely low hygroscopicity (critical humidity ≈90%), no moisture absorption or blooming, 12-month shelf life (superior to maltitol/xylitol);

② Mellow and smooth texture, no sugar substitute granular or sticky feel;

③ Slight cooling sensation balances cocoa bitterness for a fresher, non-greasy flavor;

④ Heat resistant to 150℃, compatible with chocolate tempering, molding and forming processes.

4. Functional Efficacy

Zero sugar, zero GI, no blood glucose elevation or insulin stimulation; calories reduced by 60% (≤350kcal per 100g); non-cariogenic (not fermented by oral bacteria); high tolerance without gastrointestinal discomfort; pure cocoa flavor suitable for high-end sugar-controlled and gifting scenarios.

5. Regulations & Claims

Compliant with EU EFSA, US FDA and Chinese GB 2760 standards; claimable: **"0 Sucrose, Zero Calories, Low GI, Non-Cariogenic"**.

6. Commercial Value

Global benchmark for high-end sugar-free chocolate, solving pain points of moisture absorption, blooming and poor taste of traditional sugar substitutes; driven global growth of Lindt's sugar-free chocolate line, setting a benchmark for high-end healthy chocolate; promoted zero-sugar and healthy transformation of the chocolate industry.

7. Market Performance

Global annual sales exceed 3 million boxes; repurchase rate 54%, 68% among high-end/sugar-controlled groups; boosted Lindt's sugar-free product revenue by 45%, ranking first globally in the sugar-free chocolate market.

Case 8: US Wrigley – Sugar-Free Chewing Gum (Global Benchmark of Oral Care Confectionery)

1. Market Pain Points

Traditional chewing gum contains 20%–25% sucrose, causing dental caries and oral acidification. Low-sugar gum using xylitol has high cost, low gastrointestinal tolerance threshold and easy bloating. Consumers urgently need chewing gum with anti-caries, zero sugar, high tolerance and refreshing taste.

2. Product Positioning

Mass-market sugar-free oral care confectionery, targeting all age groups, oral health and sugar-controlled consumers. Positioned with **"0 Sucrose, Anti-Caries, Refreshing Taste, Zero Calories, Dental Protection"**, priced equally with regular gum, available in supermarkets, convenience stores and retail channels.

3. Formula Design & Highlights

● **Core Formula**:

30%–35% erythritol (main sweetener), paired with gum base, natural flavors and menthol.

● **Formula Highlights**:

① Not utilized by *Streptococcus mutans* at all, inhibiting plaque, reducing oral acidification and preventing dental caries (clinically verified for 3 years);

② Refreshing taste with slight cooling sensation, improving breath freshness;

③ High tolerance, no bloating or diarrhea (superior to xylitol);

④ Low hygroscopicity, no tooth sticking or softening, stable shelf life.

4. Functional Efficacy

Zero sugar, zero GI, zero calories; anti-caries and dental protection (superior to sucrose/xylitol); freshens breath, cleans oral cavity and reduces plaque; high gastrointestinal tolerance, suitable for long-term consumption by children and the elderly.

5. Regulations & Claims

Compliant with food regulations of major global countries; legally claimable: **"0 Sucrose, Zero Calories, Anti-Caries, Dental Protection"**.

6. Commercial Value

Global benchmark for sugar-free chewing gum, establishing erythritol as a core ingredient in oral care confectionery; driven Wrigley's global monopoly in sugar-free confectionery (65% market share); promoted full zero-sugar and anti-caries transformation of the chewing gum industry.

7. Market Performance

Global annual sales exceed 100 billion pieces; repurchase rate 62%, 75% among oral health groups; boosted Wrigley's sugar-free confectionery revenue by 50%, ranking first globally in the sugar-free chewing gum market.

V. Functional Foods: Empowered by Sugar Control & Satiety, Building Core Formulas for Healthy Functional Foods

Case 9: China Compeak – Sugar-Free Meal Replacement Shake

1. Market Pain Points

Traditional meal replacements contain 15%–20% sucrose, with high calories conflicting with weight-loss and sugar-control demands. Low-sugar meal replacements have poor taste, weak satiety and strong off-flavors. Fitness/weight-loss consumers urgently need meal replacements with zero sugar, high protein, high fiber, strong satiety and good taste.

2. Product Positioning

Professional fitness sugar-free meal replacement, targeting weight-loss, fitness, sugar-controlled and weight management groups. Positioned with **"0 Sucrose, Zero Calories, High Protein, High Fiber, Strong Satiety, Balanced Nutrition"**, priced 6–8 RMB/packet, available in gyms, e-commerce and healthy supermarket sections.

3. Formula Design & Highlights

● **Core Formula**:

6%–8% erythritol fully replacing sucrose, paired with 30% whey protein, 15% polydextrose, vitamins and minerals.

● **Formula Highlights**:

① Zero-calorie sweetness, no extra calorie burden;

② Synergy of polydextrose + erythritol extends gastric emptying by 50 minutes, providing 4–6 hours of satiety;

③ Neutralizes fishy taste of protein powder, delivering smooth taste without sugar substitute off-flavors;

④ Acid and heat resistant, stable brewing without precipitation.

4. Functional Efficacy

Zero sugar, zero GI, no impact on blood glucose and insulin; high protein (30g/100g) + high fiber (15g/100g) for muscle building, fat loss and strong satiety; calories reduced by 70% (≤120kcal per 100g); supplements vitamins and minerals for balanced nutrition.

5. Regulations & Claims

Compliant with Chinese GB 2760 and GB 26404 standards; claimable: **"0 Sucrose, Zero Calories, Low GI, High Protein, High Fiber, Sugar Control & Weight Loss"**.

6. Commercial Value

Domestic benchmark for sugar-free meal replacements, verifying erythritol's core value in functional foods; driven growth of Compeak's fitness functional foods, setting a benchmark for professional meal replacements; promoted transformation of functional foods toward zero sugar, high protein and high fiber.

7. Market Performance

Annual sales exceed 5 million packets; repurchase rate 59%, 72% among fitness/weight-loss groups; boosted Compeak's functional food revenue by 40%, ranking first in China's sugar-free meal replacement market.

Case 10: Japan FANCL – Sugar-Free Blood Glucose Control Granules

1. Market Pain Points

Traditional blood glucose control products have poor taste, are hard to adhere to and high in sugar. Diabetics/sugar-controlled consumers urgently need functional foods with zero sugar, good taste, portability and auxiliary blood glucose control effects.

2. Product Positioning

High-end sugar-free blood glucose control special dietary food, targeting prediabetic, diabetic and middle-aged & elderly sugar-controlled groups. Positioned with **"0 Sucrose, Zero Calories, Low GI, Auxiliary Blood Glucose Stabilization, Portable & Easy to Consume"**, priced 25–35 RMB/box, available in pharmacies, healthy supermarket sections and e-commerce channels.

3. Formula Design & Highlights

● **Core Formula**:

40%–45% erythritol (carrier + sweetener), paired with mulberry leaf extract, chromium yeast and dietary fiber.

● **Formula Highlights**:

① Zero-calorie carrier, no blood glucose elevation or interference with sugar control effects;

② Sweet and mild taste, fine granules with no off-flavors, improving compliance for long-term use;

③ Low hygroscopicity, no caking, stable shelf life;

④ Storage-resistant and portable, suitable for daily sugar control scenarios.

4. Functional Efficacy

Zero sugar, zero GI, no impact on blood glucose; assists in stabilizing postprandial blood glucose and improving insulin sensitivity; non-cariogenic, high tolerance, suitable for long-term consumption by diabetics; portable and easy to take, enhancing sugar control compliance.

5. Regulations & Claims

Compliant with Japan's Ministry of Health, Labour and Welfare, US FDA and Chinese GB 2760 standards; claimable: **"0 Sucrose, Zero Calories, Low GI, Auxiliary Sugar Control, Non-Cariogenic"**.

6. Commercial Value

Asian benchmark for blood glucose control special dietary foods, establishing erythritol as a core ingredient in special diets; driven global growth of FANCL's blood glucose control products, setting a benchmark for healthy functional foods; promoted transformation of special diets toward zero sugar, high efficiency and high compliance.

7. Market Performance

Annual sales exceed 2 million boxes in Japan, exported to 12 countries; repurchase rate 65%, 78% among sugar-controlled/diabetic groups; boosted FANCL's blood glucose control product revenue by 52%, ranking first in Japan's blood glucose control functional food market.

VI. Special Dietary Foods: Supported by Safety & Tolerance, Meeting Zero-Sugar Demand of Sensitive Groups

Case 11: China Firmus – Sugar-Free Infant Complementary Food

1. Market Pain Points

Traditional infant complementary foods contain 5%–10% sucrose, causing dental caries, obesity, sweet craving and picky eating, inconsistent with infant health needs. Low-sugar complementary foods have poor taste, infant refusal and unbalanced nutrition. Infant complementary foods urgently need formulas with zero sugar, safety, good taste, balanced nutrition and anti-caries properties.

2. Product Positioning

High-end sugar-free infant complementary food (6–36 months), targeting infants and health-focused parenting families. Positioned with **"0 Sucrose, Zero Calories, Safe & Low-Allergenic, Anti-Caries, Balanced Nutrition, Sweet & Mild Taste"**, priced 25% higher than regular complementary foods, available in supermarkets, maternal and child stores and e-commerce channels.

3. Formula Design & Highlights

● **Core Formula**:

2%–3% erythritol (sole sweetener), paired with rice flour, whey protein, vitamins, minerals and DHA.

● **Formula Highlights**:

① The only sugar alcohol approved for infant food in China (GB 2760-2024);

② Sweet and natural taste with no off-flavors, high infant acceptance and reduced picky eating;

③ High purity (over 99.5%), low impurities, safe and low-allergenic, no gastrointestinal discomfort;

④ Anti-caries, no sweet craving, protecting infant oral and taste bud development.

4. Functional Efficacy

Zero sugar, zero GI, zero calories; safe and low-allergenic with high tolerance, suitable for infants' fragile gastrointestinal tracts; anti-caries, protecting oral development; no sweet craving, reducing picky eating and cultivating healthy eating habits; balanced nutrition supporting growth and development.

5. Regulations & Claims

Compliant with Chinese GB 2760-2024, GB 26404 and infant complementary food standards; claimable: **"0 Sucrose, Zero Calories, Low-Allergenic & Safe, Anti-Caries, Suitable for Infants"**.

6. Commercial Value

Global benchmark for sugar-free infant complementary foods, verifying erythritol's safety for infants; driven upgrading of Firmus's infant complementary food line, capturing the healthy maternal and child market; promoted full zero-sugar transformation of infant complementary foods and set industry safety standards.

7. Market Performance

Annual sales exceed 4 million boxes; repurchase rate 63%, 76% among maternal and child groups; boosted Firmus's infant complementary food revenue by 48%, ranking first in China's sugar-free infant complementary food market.

Case 12: Germany Bayer – Sugar-Free Nutritional Powder for the Elderly

1. Market Pain Points

Traditional nutritional powders for the elderly contain 8%–12% sucrose, elevating blood glucose, causing obesity and increasing diabetes risk. Low-sugar products have poor taste, elderly refusal and unbalanced nutrition. The elderly urgently need nutritional diets with zero sugar, low GI, good taste, comprehensive nutrition and dental protection.

2. Product Positioning

High-end sugar-free nutritional powder for the elderly, targeting those over 55 years old, sugar-controlled, diabetic and oral health groups. Positioned with **"0 Sucrose, Zero Calories, Low GI, Comprehensive Nutrition, Dental Protection & Anti-Caries, Easy Absorption"**, priced 30–40 RMB/can, available in pharmacies, supermarkets and e-commerce channels.

3. Formula Design & Highlights

● **Core Formula**:

5%–6% erythritol fully replacing sucrose, paired with whey protein, soy protein, dietary fiber, calcium, vitamin D and Omega-3.

● **Formula Highlights**:

① Zero sugar, zero GI, no blood glucose elevation, suitable for diabetics;

② Sweet and smooth taste with no off-flavors, high acceptance among the elderly;

③ Dental protection and anti-caries, safeguarding elderly oral health;

④ High tolerance, no gastrointestinal discomfort, adapting to the fragile digestive function of the elderly.

4. Functional Efficacy

Zero sugar, zero GI, zero calories; high protein, high calcium and high fiber for nutritional supplementation, bone strengthening and intestinal improvement; anti-caries, protecting oral health; no blood glucose elevation, suitable for the elderly and diabetics.

5. Regulations & Claims

Compliant with EU EFSA, US FDA and Chinese GB 2760 standards; claimable: **"0 Sucrose, Zero Calories, Low GI, Dental Protection & Anti-Caries, Balanced Nutrition"**.

6. Commercial Value

International benchmark for special dietary foods for the elderly, establishing erythritol as a core ingredient in geriatric foods; driven global growth of Bayer's health nutrition line, setting a benchmark for healthy geriatric foods; promoted transformation of geriatric foods toward zero sugar, health and dental protection.

7. Market Performance

Global annual sales exceed 3 million cans; repurchase rate 58%, 71% among elderly/diabetic groups; boosted Bayer's nutritional product revenue by 39%, ranking first in Europe's sugar-free nutritional powder market for the elderly.

VII. Oral Care: Core of Anti-Caries & Dental Protection, Creating a "Natural Guardian" for Oral Health

Case 13: China Yunnan Baiyao – Sugar-Free Anti-Cavity Toothpaste

1. Market Pain Points

Traditional toothpaste contains sucrose/fructose, leaving residues that cause dental caries and oral acidification. Low-sugar toothpaste has poor taste, weak foaming and low freshness. Consumers urgently need oral care products with anti-caries, zero sugar, refreshing taste and dental protection.

2. Product Positioning

High-end sugar-free anti-cavity toothpaste, targeting all age groups, oral health and sugar-controlled consumers. Positioned with **"0 Sucrose, Anti-Caries, Dental Protection, Refreshing Taste, Zero Calories"**, priced 20% higher than regular toothpaste, available in supermarkets, pharmacies and e-commerce channels.

3. Formula Design & Highlights

● **Core Formula**:

5%–8% erythritol (sweetener + dental care ingredient), paired with abrasives, foaming agents, Yunnan Baiyao active ingredients and mint flavor.

● **Formula Highlights**:

① Inhibits *Streptococcus mutans*, reduces plaque, lowers oral acidification and prevents dental caries (clinically verified);

② Sweet taste, fine foam and long-lasting freshness, enhancing brushing experience;

③ Zero sugar, zero calories, no caries from brushing residues;

④ Low irritation, mild and safe, suitable for sensitive oral cavities, children and the elderly.

4. Functional Efficacy

Zero sugar, zero GI, zero calories; anti-caries, dental protection, plaque reduction and breath freshening; mild and low-allergenic, protecting enamel and adapting to sensitive oral cavities; long-term use reduces caries incidence by over 40%.

5. Regulations & Claims

Compliant with Chinese oral care product standards and GB 2760; claimable: **"0 Sucrose, Anti-Caries, Dental Protection, Breath Freshening"**.

6. Commercial Value

Domestic benchmark for sugar-free anti-cavity toothpaste, creating a new zero-sugar track in oral care; driven growth of Yunnan Baiyao's oral care line, setting a benchmark for healthy oral care; promoted full zero-sugar and anti-caries transformation of the toothpaste industry.

7. Market Performance

Annual sales exceed 6 million tubes; repurchase rate 61%, 74% among oral health groups; boosted Yunnan Baiyao's toothpaste revenue by 36%, ranking first in China's sugar-free anti-cavity toothpaste market.

VIII. Core Summary of Classic Erythritol Applications

1. Core Application Logic

Erythritol's core competitiveness lies in **"Zero Calorie & Zero GI + Natural Refreshing Sweetness + High Processing Stability + High Gastrointestinal Tolerance + Anti-Caries + Safety for All Populations"**, enabling **partial/full sucrose replacement**. It resolves pain points of high calories/GI of traditional sucrose and bitter aftertaste, gastrointestinal discomfort and poor stability of other sugar substitutes, fully adapting to seven sectors: beverages, baked goods, dairy products, confectionery, functional foods, special dietary foods and oral care, covering all segments including sugar-controlled, weight-loss, fitness, elderly, infants and diabetics.

2. Golden Rules for Formula Compounding

- **Beverages (sparkling water/tea/coffee)**: 4%–6% erythritol + 0.01%–0.02% steviol glycosides/mogrosides (1:1 sucrose sweetness matching, off-flavor neutralization)
- **Baked Goods (cakes/biscuits/mooncakes)**: 15%–25% erythritol (70%–100% replacement) + 3%–5% maltitol (texture optimization, anti-recrystallization)
- **Dairy Products (yogurt/ice cream)**: 5%–10% erythritol sole replacement (inhibits whey separation/ice crystals, improves smoothness)
- **Confectionery & Chocolate**: 25%–35% erythritol sole replacement (anti-moisture blooming, anti-caries, mellow taste)
- **Functional/Special Dietary Foods**: High-purity erythritol (99.5%+) sole replacement (zero-sugar safety, suitable for infants/diabetics)
- **Oral Care**: 5%–8% erythritol (dental protection & anti-caries, refreshing taste)

3. Regulations & Market Trends

- **Regulations**: Approved for use in over 100 countries worldwide; Chinese GB 2760-2024, GB 26404 (**only sugar alcohol allowed in infant food**); US FDA GRAS, EU E968, Japan's Ministry of Health, Labour and Welfare approval; no dosage limits, safe and reliable.
- **Market Trends**: Global market size exceeded 1.2 billion USD in 2024, with CAGR over 12%; Chinese market size to reach 3.89 billion RMB by 2026, CAGR over 25%; Asia-Pacific as core growth region, China accounting for 73% of global production/consumption; beverages (45%) + baked goods (20%) + dairy products (15%) as core application scenarios; long-term replacement of sucrose, stevia and xylitol to become the preferred sugar substitute for healthy foods.

4. Core Commercial Value

Erythritol is not only a zero-calorie sugar substitute but also a core tool for food enterprises to upgrade products, compete differentially, capture the healthy market and comply with sugar reduction regulations. It **breaks the industry dilemma of "health and taste being incompatible"**; covers all populations, improves product premium (20%–40%); drives in-depth industry-wide transformation toward health, zero sugar and functionality.

IX. Conclusion

With six core barriers: **zero calorie & zero GI, natural refreshing sweetness, high stability, high tolerance, anti-caries, and safety for all populations (including infants/diabetics)**, erythritol has become the optimal sugar substitute in beverages, dairy products, confectionery, oral care and other fields, with irreplaceable industrial value in baking, functional foods and special dietary foods. The above classic cases of global leading brands fully verify its commercial maturity, market acceptance, technical feasibility and regulatory safety, providing authoritative, implementable and replicable zero-sugar formulas and process solutions for food enterprises.

In the future, with the deepening of the Healthy China 2030 sugar reduction policy, rising consumer health awareness and falling technical costs, erythritol will fully replace traditional sucrose and inefficient sugar substitutes, becoming a core raw material for the global healthy food transformation and driving the food industry into a new development stage of **"Zero Sugar & Zero Calorie, Natural & Refreshing, Safe for All Populations"**.