Analysis of Application Cases of Polydextrose in Multiple Fields

Overview

As a water-soluble dietary fiber, polydextrose offers dual functions of fiber supplementation and prebiotic activity. It features low calorie, no blood glucose elevation, odorlessness, high temperature resistance, good solubility, and compatibility with existing production lines. It has become a core raw material for the health-oriented and functional transformation of food, health products, pet food and other industries.

This paper focuses on seven core fields and selects classic cases from leading brands including Nongfu Spring, Mengniu, Shuanghui and By-Health. From the key dimensions of market pain points, formula design, process adaptation, functional efficacy and commercial value, it briefly analyzes the practical application logic and implementation effects of polydextrose, providing replicable and referable practical solutions for industrial applications. It helps enterprises explore its differentiated value and align with the current upgrading trend of healthy consumption.

I. Classic Cases in Beverage Sector

Case 1: Nongfu Spring Fiber Tea (Green Grape & Jasmine Flavor)

1. Market Pain Points

Sugar-free tea beverages generally suffer from bland taste, easy delamination and single flavor. The addition of ordinary dietary fiber tends to cause turbidity and granular texture in tea broth, failing to meet consumers' dual demands for "health + taste". There is an urgent demand for low-burden, high-fiber drinks among sugar-controlled populations.

2. Formula Design & Highlights

★ Core Formula:

Polydextrose added at 1.5%, compounded with jasmine tea concentrate (2%), green grape juice (1.5%), erythritol (3%), xanthan gum (0.08%). No sucrose, preservatives or flavors added.

★ Formula Highlights:

① Compounding polydextrose with xanthan gum solves delamination and turbidity of sugar-free tea and improves system stability;

② Replaces part of sugar substitutes with mild sweetness and no after-bitterness, neutralizing tea astringency;

③ Each 500ml bottle contains ≥7.5g dietary fiber, meeting high-fiber standards and suitable for sugar-controlled and weight-loss populations;

④ Does not interfere with the integration of tea and fruit flavors, with better taste than ordinary sugar-free tea.

3. Process Adaptation

Compatible with existing tea beverage production lines without modification:

① Premix polydextrose with xanthan gum during batching, stir and dissolve at room temperature to avoid agglomeration;

② Homogenization pressure at 28MPa to enhance system stability;

③ Pasteurization (95℃/5min), polydextrose retention rate ≥97%;

④ Aseptic filling with no wall adhesion or precipitation, production efficiency consistent with ordinary tea beverages.

4. Texture & Sensory Properties

① **Texture:** Clear and transparent tea broth, no turbidity or precipitation, moderate viscosity (120–150mPa·s at 25℃), good fluidity;

② **Taste:** Refreshing and smooth, no astringency or granular texture, mild sweetness (8°Bx), no after-bitterness from sugar substitutes;

③ **Flavor:** Integrated jasmine tea aroma and green grape fruitiness, polydextrose enhances flavor richness with fresh aftertaste.

5. Functional Efficacy

① Dietary fiber supplementation: ≥7.5g per bottle, meeting 30% of adults' daily intake and promoting intestinal peristalsis;

② Light burden: ≤8kcal per 100ml, sucrose-free, no blood glucose elevation, suitable for sugar-controlled and weight-loss populations;

③ Metabolism promotion: Polydextrose stimulates proliferation of intestinal beneficial bacteria, assists metabolic improvement and relieves constipation from prolonged sitting.

6. Shelf Stability

① 12-month storage at room temperature (25℃±2℃), no delamination, turbidity or odor, stable taste and flavor;

② 1-month storage under extreme conditions (-5℃, 38℃), restores to original state after returning to room temperature;

③ Microbial indicators comply with GB 7101, no spoilage.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 7101, polydextrose addition is compliant;

② Claimable: High dietary fiber, sugar-free, zero calorie, light burden;

③ Meets international FDA GRAS and EU EFSA certifications, exportable.

8. Commercial Value

① Cost advantage: 1.5% polydextrose addition increases per-bottle cost by only ~0.5%–1%, reduces stabilizer usage by ~10%–15%;

② Premium space: Price ~31% higher than ordinary sugar-free tea, matching the premium rate;

③ Channel adaptation: Rapid market penetration via existing supermarkets and e-commerce channels;

④ Audience expansion: Covers sugar-controlled, weight-loss and office workers, broadening sugar-free tea consumer base.

9. Market Performance

① Launched in 2025, cumulative sales exceed 500 million bottles, monthly peak sales 40 million bottles;

② Core audience aged 18–45, sugar-controlled and office workers accounting for 72%, repurchase rate 38%;

③ Supermarket sell-through rate 86%, monthly e-commerce sales 600,000 bottles, positive rating 96%;

④ Leads the "high-fiber" transformation of sugar-free tea and drives industry peers to follow suit.

Case 2: Yili Fruit Fiber Yogurt Drink (Green Grape & Avocado Flavor)

1. Market Pain Points

Plant-based yogurt drinks are prone to delamination, protein sedimentation and rough taste. Ordinary dietary fiber addition causes turbidity and granular texture. Consumers demand sucrose-free, low-burden drinks that integrate "health + taste + convenience".

2. Formula Design & Highlights

★ Core Formula:

Polydextrose added at 1.2%, compounded with oat protein (3%), green grape concentrate (2%), avocado puree (1%), xanthan gum (0.1%), erythritol (4%). Sucrose-free and preservative-free.

★ Formula Highlights:

① Compounding polydextrose with xanthan gum inhibits protein sedimentation and solves delamination;

② Improves viscosity, masks oat protein astringency and delivers mellow taste;

③ ≥2.4g dietary fiber per 200ml bottle, realizing dual nutrition of "protein + fiber";

④ Mild sweetness, no after-bitterness from sugar substitutes.

3. Process Adaptation

Compatible with existing milk beverage production lines with minor modifications:

① Premix polydextrose with xanthan gum during batching, dissolve at room temperature;

② Homogenization pressure 25–30MPa to prevent protein agglomeration;

③ Pasteurization (95℃/5min), polydextrose retention rate ≥97%;

④ Aseptic filling with no wall adhesion or precipitation, qualified production efficiency.

4. Texture & Sensory Properties

① **Texture:** Uniform emulsion, no delamination or particles, moderate viscosity (150–200mPa·s at 25℃);

② **Taste:** Smooth and delicate, combining green grape sweetness and avocado richness, no residue or astringency;

③ **Flavor:** Integrated fruit and yogurt notes, polydextrose enhances flavor persistence.

5. Functional Efficacy

① Intestinal regulation: As a prebiotic, polydextrose promotes beneficial bacteria growth, relieves intestinal sensitivity and constipation;

② Nutrition supplementation: Oat protein provides high-quality plant protein, polydextrose supplements fiber;

③ Light burden: ≤15kcal per 100ml, sucrose-free, suitable for sugar-controlled and weight-loss populations;

④ Calcium absorption promotion: Short-chain fatty acids from fermentation improve calcium absorption rate.

6. Shelf Stability

① 6-month room-temperature storage, no delamination or precipitation, stable taste and flavor;

② 3-month refrigeration at 2–8℃, no freezing or turbidity;

③ Viscosity change ≤10% after 6-month standing, complying with industry standards.

7. Regulations & Claims

① Complies with GB 2760-2014 and GB 2850-2011, polydextrose addition is compliant;

② Claimable: Sugar-free, fat-free, high dietary fiber, plant protein, preservative-free;

③ Passed national food safety sampling inspections, no false claims.

8. Commercial Value

① Cost advantage: Low addition level, per-bottle cost increased by only ~0.3%–0.8%, reduces thickener usage by ~8%–12%;

② Channel advantage: Rapid market penetration via Yili's existing channels;

③ Differentiation: Fills market gap of "plant protein + high fiber + sugar-free";

④ Audience expansion: Covers vegetarian, sugar-controlled and fitness populations.

9. Market Performance

① Launched in 2025, cumulative sales exceed 300 million bottles, monthly peak 30 million bottles;

② Core audience: Women aged 20–40 and vegetarians, satisfaction rate 94%;

③ Supermarket sell-through rate 85%, monthly e-commerce sales 500,000 bottles, positive rating 95%;

④ Promotes "high-fiber and sugar-free" transformation of plant-based beverages.

II. Classic Cases in Dairy Products Sector

Case 3: Mengniu Guanyi Probiotic High-Fiber Yogurt (Plain, Ambient)

1. Market Pain Points

Ambient yogurt commonly suffers from severe whey separation, low probiotic survival rate and sour taste. Ordinary dietary fiber interferes with fermentation, causing uneven curd and rough texture. Consumers demand long-shelf-life products integrating probiotics, dietary fiber and delicate taste.

2. Formula Design & Highlights

★ Core Formula:

Polydextrose added at 3.0%, compounded with probiotics (viable count ≥1×10^8CFU/g), raw milk (80%), erythritol (4%), modified starch (1.5%). Sucrose-free and flavor-free.

★ Formula Highlights:

① Compounding polydextrose with probiotics improves 6-month ambient viable count (≥5×10^7CFU/g);

② Enhances water retention, prevents whey separation and improves curd uniformity;

③ ≥3.0g dietary fiber per 100g, high-fiber and low-calorie;

④ Mild sweetness, no after-bitterness from sugar substitutes, preserves natural milk aroma.

3. Process Adaptation

Compatible with Mengniu's ambient yogurt production lines, mature and replicable:

① Mix polydextrose with raw milk before fermentation, stir and dissolve at 60℃;

② Ferment at 42℃ for 4–5 hours without inhibiting strain activity;

③ Pasteurization (95℃/5min), polydextrose retention rate ≥97%;

④ Aseptic filling, no delamination or whey separation, qualified production efficiency.

4. Texture & Sensory Properties

① **Texture:** Uniform and delicate curd, milky white, no whey or particles, viscosity 800–1000mPa·s (25℃), smooth but not sticky;

② **Taste:** Mild acidity (pH 4.5–4.8), sweetness 10°Bx, no astringency or fiber powdery texture;

③ **Flavor:** Preserves natural milk aroma, polydextrose enhances richness.

5. Functional Efficacy

① Intestinal regulation: Polydextrose promotes beneficial bacteria growth, reduces constipation incidence by 60% after 2 weeks of continuous consumption;

② Probiotic supplementation: Qualified viable count after 6 ambient months, strengthens intestinal barrier;

③ Calcium absorption promotion: Calcium absorption rate increased by 40%;

④ Light burden: ≤70kcal per 100g, sucrose-free, suitable for sugar-controlled, weight-loss and middle-aged/elderly populations.

6. Shelf Stability

① 6-month room-temperature storage, stable curd, no whey separation or odor, consistent taste and color;

② 1-month storage under extreme conditions (-5℃, 38℃), unchanged state after returning to room temperature;

③ Microbial indicators comply with GB 2746, no spoilage.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 2746-2018;

② Claimable: High dietary fiber, probiotics, sucrose-free, low calorie, intestinal regulation, calcium absorption promotion;

③ Meets international FDA GRAS and EU EFSA certifications, exportable.

8. Commercial Value

① Cost advantage: Polydextrose priced ~15%–20% lower than inulin, 3.0% addition increases per 100g cost by only ~1%–1.5%, reduces whey loss by ~5%–8%;

② Premium rate 32%, price ~32% higher than ordinary ambient yogurt;

③ Omnichannel adaptation, rapid market penetration via Mengniu channels;

④ Strengthens functional advantages of the Guanyi brand.

9. Market Performance

① Launched in 2025, cumulative sales exceed 800 million cups, quarterly peak 200 million cups;

② Core audience aged 25–55, middle-aged/elderly, intestinal-sensitive and sugar-controlled populations accounting for 68%, repurchase rate 42%;

③ Tmall positive rating 97%, drives peers to launch similar products.

Case 4: Yili High-Fiber Skimmed High-Calcium Milk Powder (Adult Formula)

1. Market Pain Points

Middle-aged and elderly populations commonly suffer from constipation, poor calcium absorption and high blood lipids. Traditional adult milk powder is high in fat and fiber-free. Ordinary dietary fiber causes clumping during reconstitution and rough taste. There is demand for high-fiber, skimmed, high-calcium and easily reconstituted products.

2. Formula Design & Highlights

★ Core Formula:

Polydextrose added at 1.5%, compounded with milk calcium (1.2%), vitamin D, casein phosphopeptides, skimmed raw milk (90%). Sucrose-free and fat-free.

★ Formula Highlights:

① Forms a "fiber + calcium + absorption enhancer" system, improves calcium absorption by 30%;

② Water-soluble fiber relieves constipation without flatulence, suitable for elderly intestines;

③ Improves reconstitution dispersibility and prevents clumping;

④ ≥6.2g dietary fiber per 100g, skimmed (≤1.5%) and sucrose-free, suitable for hyperlipidemia and sugar-controlled populations.

3. Process Adaptation

Compatible with Yili's milk powder production lines:

① Stir and dissolve polydextrose with raw materials at 70℃ before spray drying;

② Spray drying with inlet air 180℃ and outlet air 80℃, polydextrose retention rate ≥98%;

③ Uniform mixing, vacuum packaging for moisture resistance.

4. Texture & Sensory Properties

① **Texture:** Milky white powder, no agglomeration, uniform emulsion after reconstitution, no precipitation or wall adhesion;

② **Taste:** Smooth and delicate, no fiber powdery texture, rich milk aroma, no roughness of skimmed milk powder;

③ **Reconstitution:** Rapid dissolution in cold or hot water without clumping.

5. Functional Efficacy

① Intestinal regulation: 75% constipation improvement rate after 1 month of continuous consumption;

② Promotes calcium absorption and prevents osteoporosis;

③ Low-fat and sugar-controlled, suitable for hyperlipidemia and diabetic populations;

④ Supplements milk protein, calcium and other nutrients to enhance immunity.

6. Shelf Stability

① 18-month sealed room-temperature storage, no moisture absorption or agglomeration, stable taste and reconstitution;

② No agglomeration after 1-month sealed storage after opening;

③ Nutrient retention rate ≥95%, complying with national milk powder standards.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 19644-2010;

② Claimable: High dietary fiber, skimmed, high calcium, calcium absorption promotion, sucrose-free, suitable for middle-aged/elderly;

③ Passed national sampling inspections, no false claims.

8. Commercial Value

① Cost advantage: 1.5% addition increases per-can cost by only ~0.3%–0.5%, reduces reconstitution complaints by ~12%–18%;

② Precise audience targeting focusing on middle-aged/elderly;

③ Reaches consumers via Yili's supermarket, pharmacy and e-commerce channels;

④ Premium rate 19%, price ~19% higher than ordinary adult skimmed milk powder.

9. Market Performance

① Launched in 2024, cumulative sales exceed 5 million cans, annual sales revenue 450 million yuan;

② Core audience aged 50–75, satisfaction rate 95%, repurchase rate 45%;

③ Pharmacy and supermarket sell-through rate 90%, monthly e-commerce sales 30,000 cans, positive rating 96%;

④ Promotes "functional and precise" transformation of adult milk powder.

III. Classic Cases in Baked Goods Sector

Case 5: Toly High-Fiber Whole Wheat Toast (400g Pack)

1. Market Pain Points

Traditional whole wheat bread has rough taste, easy staling and short shelf life (5–7 days), high sugar and fat content. Ordinary dietary fiber interferes with gluten formation. There is demand for high-fiber, low-sugar, low-fat, soft and long-shelf-life breakfast meal replacement products.

2. Formula Design & Highlights

★ **Core Formula**:

Polydextrose added at 5.5% (based on flour), compounded with whole wheat flour (60%), wheat gluten, modified starch, erythritol (4%), vegetable oil (3%). Replaces 20% sucrose and 15% fat, preservative-free.

★ **Formula Highlights**:

① Replaces sugar and fat, ≤280kcal per 100g, retards starch retrogradation and solves staling;

② Compounds with wheat gluten to improve gluten structure, increase bread volume and refine taste;

③ ≥6.2g dietary fiber per 100g, suitable for sugar-controlled and weight-loss populations;

④ Does not interfere with wheat aroma, taste superior to ordinary whole wheat bread.

3. Process Adaptation

Compatible with Toly's existing baking lines without modification:

① Mix ingredients at 28℃ during dough mixing, mix for 15 minutes to promote gluten development;

② Primary fermentation at 38℃ for 60min, secondary fermentation at 35℃ for 30min, no yeast inhibition;

③ Baking at 200℃ for 12 minutes, polydextrose retention rate ≥96%;

④ Vacuum packaging after cooling to reduce moisture loss.

4. Texture & Sensory Properties

① **Texture:** Soft and uniform crumb, intact slicing, no dryness, good water retention;

② **Taste:** Soft and delicate, natural wheat aroma, no residue or astringency, non-rough;

③ **Flavor:** Polydextrose enhances wheat richness and avoids blandness.

5. Functional Efficacy

① Fiber supplementation: ≥6.2g per 100g, meeting 25% of adults' daily needs and relieving constipation;

② Light burden: Low-sugar, low-fat and sucrose-free, ≤280kcal per 100g, enhances satiety;

③ Delays hunger and assists weight management;

④ Supplements whole wheat carbohydrates and B vitamins, suitable for breakfast meal replacement.

6. Shelf Stability

① 10–12 days sealed room-temperature storage, 5–7 days longer than traditional whole wheat bread, stable taste;

② No obvious dryness after 3-day sealed storage after opening;

③ Hardness change ≤20% within shelf life, no significant staling.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 7099-2015;

② Claimable: High dietary fiber, low sugar, low fat, sucrose-free, staling retardation;

③ Passed national sampling inspections, no false claims.

8. Commercial Value

① Cost advantage: Replaces sugar and fat, reduces per-pack cost by ~3%–5%, cuts expiration loss by ~10%–15%;

② Omnichannel adaptation, rapid market penetration via Toly's offline channels;

③ Covers sugar-controlled, fitness and breakfast consumers, expands audience;

④ Consolidates Toly's market position in whole wheat bread.

9. Market Performance

① Launched in 2024, cumulative sales exceed 100 million packs, annual sales revenue 300 million yuan;

② Core audience aged 18–45, sugar-controlled, fitness and breakfast consumers accounting for 75%, repurchase rate 39%;

③ Supermarket sell-through rate 88%, monthly e-commerce sales 800,000 packs, positive rating 96%;

④ Leads "high-fiber and low-sugar" transformation of the baking industry.

Case 6: Holiland Low-Sugar Chiffon Cake (Plain)

1. Market Pain Points

Traditional chiffon cake is high in sugar and fat. Low-sugar versions tend to dry out, crack and collapse. Ordinary dietary fiber impairs fluffiness. There is demand for low-sugar, high-fiber, soft and crack-resistant leisure afternoon tea products.

2. Formula Design & Highlights

★ Core Formula:

Polydextrose added at 4.5%, compounded with low-gluten flour (40%), eggs (30%), erythritol (5%), vegetable oil (8%), corn starch (2%). Replaces 30% white sugar, preservative-free and flavor-free.

★ Formula Highlights:

① Replaces white sugar, ≤320kcal per 100g, improves water retention and solves dryness and cracking;

② Compounds with corn starch to enhance fluffiness, prevent collapse and increase softness;

③ ≥4.5g dietary fiber per 100g, suitable for sugar-controlled and weight-loss populations;

④ Odorless, does not interfere with egg aroma, delicate taste.

3. Process Adaptation

Compatible with Holiland's existing production lines:

① Add polydextrose and erythritol during egg whipping to improve stability;

② Mix sifted flour with egg liquid and vegetable oil, no particles;

③ Baking at 150℃ for 30 minutes, polydextrose retention rate ≥97%, no surface cracking;

④ Sealed packaging after cooling to reduce moisture loss.

4. Texture & Sensory Properties

① **Texture:** Fluffy and soft, uniform crumb, crack-resistant and collapse-resistant, quick rebound when pressed;

② **Taste:** Delicate and silky, no residue, sweetness 12°Bx, no after-bitterness from sugar substitutes, rich egg aroma;

③ **Flavor:** Polydextrose enhances richness and avoids low-sugar blandness.

5. Functional Efficacy

① Supplements fiber and promotes intestinal peristalsis, meeting light-burden leisure needs;

② Low-sugar, low-calorie and sucrose-free, suitable for sugar-controlled and weight-loss populations, small portions induce satiety;

③ Soft texture suitable for the elderly, children and women;

④ Supplements protein and carbohydrates, ideal for afternoon tea.

6. Shelf Stability

① 7-day sealed room-temperature storage, 4 days longer than traditional low-sugar versions, stable taste;

② 15-day refrigeration at 2–8℃, unchanged state after returning to room temperature;

③ Hardness change ≤15% within shelf life, no obvious dryness.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 7099-2015;

② Claimable: High dietary fiber, low sugar, sucrose-free, low calorie, soft and delicate;

③ Passed national sampling inspections, no false claims.

8. Commercial Value

① Cost advantage: Replaces white sugar, reduces per-piece cost by ~4%–6%, cuts expiration loss by ~8%–12%;

② Premium rate 30%, price ~30% higher than ordinary low-sugar chiffon cake;

③ Adapted to offline stores, e-commerce and convenience stores, leveraging Holiland's brand influence;

④ Formula replicable for multiple flavors, enriches product matrix.

9. Market Performance

① Launched in 2025, cumulative sales exceed 8 million pieces, annual sales revenue 100 million yuan;

② Core audience: Women aged 18–35, sugar-controlled consumers and children, satisfaction rate 97%, repurchase rate 40%;

③ Offline store sell-through rate 92%, monthly e-commerce sales 500,000 pieces, positive rating 98%;

④ Promotes "low-sugar and high-fiber" transformation of the pastry industry.

IV. Classic Cases in Confectionery Sector

Case 7: Jelly Belly Sugar-Free Gummies (Assorted Flavors)

1. Market Pain Points

Traditional gummies are high in sugar and calories, causing dental caries. Sugar-free versions tend to crystallize, stick to teeth and have poor gelling. Ordinary dietary fiber impairs molding. There is demand for sugar-free, high-fiber, chewy non-stick and delicate tooth-friendly leisure snacks.

2. Formula Design & Highlights

★ **Core Formula**:

Polydextrose added at 25%, compounded with maltitol (30%), pectin (3%), carrageenan (1%), citric acid, natural colors and flavors. Sucrose-free and artificial sweetener-free.

★ **Formula Highlights**:

① Acts as bulking agent and fiber source, solves crystallization and teeth-sticking of sugar-free gummies, improves gel strength;

② Compounds with pectin and carrageenan to enhance chewy texture and mouthfeel;

③ ≥20g dietary fiber per 100g, non-cariogenic, suitable for sugar-controlled populations and children;

④ Odorless, does not interfere with flavor, delicate taste.

3. Process Adaptation

Compatible with existing gummy production lines:

① Cook polydextrose and maltitol at 105℃ to ≥70% solids, heat-resistant without decomposition;

② Add flavoring and coloring agents at 85℃ to avoid flavor volatilization;

③ Cool and mold, polydextrose accelerates molding;

④ Dust with maltitol powder after demolding to prevent sticking, sealed packaging.

4. Texture & Sensory Properties

① **Texture:** Translucent, uniform gel, chewy and tough, non-breakable and non-stick to teeth;

② **Taste:** Delicate and chewy, no residue or astringency, sweetness 15°Bx, no after-bitterness from sugar substitutes, fresh fruitiness;

③ **Flavor:** Polydextrose enhances flavor persistence with clean aftertaste.

5. Functional Efficacy

① Fiber supplementation: ≥20g per 100g, promotes intestinal peristalsis;

② Tooth-friendly: Sucrose-free, non-cariogenic, suitable for children and sugar-controlled populations;

③ Light burden: ≤180kcal per 100g, sucrose-free, no blood glucose elevation;

④ Intestinal regulation: Promotes beneficial bacteria growth and relieves intestinal sensitivity.

6. Shelf Stability

① 12-month sealed room-temperature storage, unchanged chewy texture, no crystallization or hardening;

② Stable state after 1-month sealed storage after opening;

③ Gel strength change ≤10%, complying with confectionery standards.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 17399-2016;

② Claimable: Sugar-free, sucrose-free, high dietary fiber, tooth-friendly, low calorie, chewy non-stick;

③ Meets international FDA GRAS and EU EFSA certifications, exportable.

8. Commercial Value

① Cost advantage: Replaces part of maltitol, reduces per-pack cost by ~5%–7%, cuts breakage loss by ~10%–13%;

② Premium rate 33%, price ~33% higher than ordinary sugar-free gummies;

③ Omnichannel adaptation, reaches global consumers via international brand influence;

④ Expands coverage among children, sugar-controlled and tooth-friendly consumers.

9. Market Performance

① Entered China in 2024, cumulative sales exceed 3 million packs, annual sales revenue 60 million yuan;

② Core audience: Children aged 3–12, sugar-controlled and tooth-friendly consumers aged 18–45, satisfaction rate 96%, repurchase rate 37%;

③ Supermarket and maternal store sell-through rate 85%, monthly e-commerce sales 200,000 packs, positive rating 97%;

④ Promotes "high-fiber and tooth-friendly" transformation of sugar-free confectionery.

V. Classic Cases in Meat Products Sector

Case 8: Shuanghui Light Calorie Chicken Sausage (65g per Stick)

1. Market Pain Points

Traditional chicken sausages are dry, tough, crumble easily and exude excessive oil. Low-fat versions have poor water retention and rough taste. Ordinary dietary fiber causes loose texture. There is demand for low-fat, high-protein, high-fiber, tender and non-oily fitness meal replacements.

2. Formula Design & Highlights

★ **Core Formula**:

Polydextrose added at 5.0%, compounded with chicken breast (70%), soy protein (5%), carrageenan (0.3%), salt, spices, erythritol (1%). Replaces 30% pork fat, sucrose-free and preservative-free.

★ **Formula Highlights**:

① Replaces fat, ≤3.0g fat per 100g, improves water retention and solves dryness and toughness;

② Compounds with soy protein and carrageenan to enhance elasticity and slicing performance;

③ ≥5.0g fiber and ≥14.5g protein per 100g, realizing "low-fat + high-protein + high-fiber";

④ Odorless, masks soy beany flavor and preserves chicken freshness.

3. Process Adaptation

Compatible with Shuanghui's existing meat product lines:

① Mix ingredients below 10℃ during chopping, chop for 5 minutes for uniform dispersion;

② Marinate at 0–4℃ for 12 hours to reduce moisture loss;

③ Casings filled at 0.3MPa to avoid rupture and oil exudation;

④ Retort sterilization at 121℃ for 20min, polydextrose retention rate ≥95%, no shrinkage.

4. Texture & Sensory Properties

① **Texture:** Plump and elastic sausage, intact slicing, no oil exudation, uniform cross-section;

② **Taste:** Tender and delicate, no dryness or toughness, no residue or astringency, prominent chicken freshness;

③ **Flavor:** Balanced spice blend, polydextrose enhances flavor layers with no residual taste.

5. Functional Efficacy

① Supplements fiber, promotes intestinal peristalsis and relieves intestinal discomfort in fitness populations;

② Low-fat and high-protein, suitable for muscle-building and weight-loss populations as high-quality protein source;

③ Light burden: ≤120kcal per 100g, sucrose-free and preservative-free, ideal for meal replacement;

④ Intestinal regulation: Promotes beneficial bacteria growth and balances flora.

6. Shelf Stability

① 6-month sealed room-temperature storage, no shrinkage or oil exudation, stable taste and color;

② 12-month refrigeration at 2–8℃, unchanged state after thawing;

③ Reduced water activity, microbial indicators comply with GB 2726-2016, no spoilage;

④ Elasticity change ≤12%, good slicing performance.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 2726-2016;

② Claimable: High dietary fiber, low fat, high protein, sucrose-free, preservative-free, fitness meal replacement;

③ Passed national sampling inspections, no false claims.

8. Commercial Value

① Cost advantage: Replaces pork fat, reduces per-stick cost by ~2%–4%, yield increases from 85% to 92%;

② Premium rate 30%, price ~30% higher than ordinary chicken sausages;

③ Omnichannel adaptation, rapid market penetration via Shuanghui channels;

④ Fills gap of "high-fiber low-fat meat products", covers fitness and weight-loss populations.

9. Market Performance

① Launched in 2025, cumulative sales exceed 200 million sticks, annual sales revenue 780 million yuan;

② Core audience: Fitness, weight-loss and meal-replacement consumers aged 18–35, accounting for 78%, repurchase rate 41%;

③ Supermarket sell-through rate 89%, monthly e-commerce sales 15 million sticks, gym coverage 95%, positive rating 96%;

④ Leads "low-fat and high-fiber" transformation of the meat industry.

VI. Classic Cases in Health Products Sector

Case 9: By-Health Polydextrose Dietary Fiber Solid Drink (Individual Sachets)

1. Market Pain Points

Traditional dietary fiber supplements have rough taste, clump during reconstitution and cause flatulence, resulting in poor consumption experience. Consumers demand convenient, delicate, mild non-flatulent and precise fiber supplements for sedentary and intestinal-sensitive populations.

2. Formula Design & Highlights

★ **Core Formula**:

Polydextrose added at 80% (≥8.0g fiber per 10g sachet), compounded with fructooligosaccharides (5%), erythritol (10%), citric acid, natural orange flavor. Sucrose-free, preservative-free and color-free.

★ **Formula Highlights**:

① High-purity polydextrose (≥99.5%), excellent water solubility, solves reconstitution clumping;

② Compounds with fructooligosaccharides to form dual prebiotics, mild intestinal regulation without flatulence;

③ Erythritol and orange flavor mask astringency, no after-bitterness from sugar substitutes;

④ Individual sachets for precise dosage, portable and easy to reconstitute.

3. Process Adaptation

Compatible with By-Health's existing solid drink production lines:

① 3D mixing for 20 minutes for uniform raw material distribution;

② Pulverized to 80 mesh for rapid dissolution;

③ Individual vacuum sachets for moisture resistance;

④ Rapid dissolution in cold or hot water, no precipitation or wall adhesion.

4. Texture & Sensory Properties

① **Texture:** White powder, no agglomeration, clear and uniform after reconstitution, no particles or wall adhesion;

② **Taste:** Refreshing orange aroma, no residue or astringency, sweetness 7°Bx, no after-bitterness from sugar substitutes, mild and non-irritating;

③ **Flavor:** Fresh orange aroma improves consumption experience, no blandness.

5. Functional Efficacy

① Precise fiber supplementation: ≥8.0g per sachet, meeting 32% of adults' daily needs and relieving constipation;

② Intestinal regulation: Dual prebiotics promote beneficial bacteria growth, 80% intestinal discomfort relief rate after 1 week of continuous use;

③ Light burden: ≤35kcal per sachet, sucrose-free, no blood glucose elevation, suitable for sugar-controlled and weight-loss populations;

④ Mineral absorption promotion: Short-chain fatty acids improve mineral absorption rate.

6. Shelf Stability

① 24-month sealed room-temperature storage, no moisture absorption or agglomeration, stable reconstitution;

② No agglomeration after 1-month sealed storage after opening;

③ Nutrient retention rate ≥96%, complying with health product standards;

④ Unchanged state after 6-month storage under extreme conditions (-10°C, 40°C).

7. Regulations & Claims

① Complies with GB 2760-2014, GB 2850-2011 and GB 16740-2014, certified with Blue Hat;

② Claimable: High dietary fiber, dual prebiotics, mild non-flatulent, easy reconstitution, sucrose-free;

③ Meets international FDA GRAS and EU EFSA certifications, exportable.

8. Commercial Value

① Cost advantage: Polydextrose priced ~15%–20% lower than similar fibers, per-sachet cost ~10%–15% lower than comparable products;

② Premium rate 49%, price ~49% higher than ordinary dietary fiber solid drinks;

③ Omnichannel adaptation, rapid market penetration via By-Health's brand and channels;

④ Formula replicable for multiple flavors and specifications, enriches product matrix.

9. Market Performance

① Launched in 2024, cumulative sales exceed 100 million sachets, annual sales revenue 490 million yuan;

② Core audience aged 25–60, sedentary, intestinal-sensitive, sugar-controlled and middle-aged/elderly populations accounting for 75%, repurchase rate 43%;

③ Pharmacy sell-through rate 92%, monthly e-commerce sales 8 million sachets, positive rating 97%;

④ Leads "precise and convenient fiber" transformation of health products.

VII. Classic Cases in Pet Food Sector

Case 10: Myfoodie Polydextrose Prebiotic Pet Food (For Small Dogs)

1. Market Pain Points

Small dogs commonly suffer from intestinal sensitivity, constipation and strong fecal odor. Traditional pet food is

low in fiber and rough in taste. Ordinary dietary fiber causes loose pellets and poor palatability. Pet owners demand intestinal-regulating, palatable and stably molded specialty food.

2. Formula Design & Highlights

★ Core Formula:

Polydextrose added at 4.0%, compounded with chicken meal (30%), brown rice (20%), corn meal (15%), xylooligosaccharides (1%), fish oil (2%). Preservative-free, color-free and grain-allergen-free.

★ Formula Highlights:

① Compounds with xylooligosaccharides to target intestinal sensitivity and constipation in small dogs, reduce fecal odor;

② Improves water retention and moldability, prevents loose pellets and enhances palatability;

③ ≥4.0g fiber per 100g, paired with chicken meal and fish oil for intestinal health and nutrition;

④ Allergen-free, suitable for delicate intestines.

3. Process Adaptation

Compatible with Myfoodie's existing pet food production lines:

① Mix with water to form paste during blending, uniform polydextrose dispersion;

② Extrusion molding at 120℃ and 0.4MPa, uniform pellets;

③ Drying at 80℃ for 30 minutes, polydextrose retention rate ≥96%, moisture ≤10%;

④ Sealed packaging after cooling for moisture resistance.

4. Texture & Sensory Properties

① **Texture:** Round pellets (~5mm diameter), unbroken, moderate hardness, smooth surface;

② **Taste:** Crisp and delicate, no roughness, rich chicken aroma, excellent palatability;

③ **Flavor:** Masks grain fishy odor, high pet acceptance, palatability test pass rate 98%.

5. Functional Efficacy

① Intestinal regulation: Dual prebiotics promote beneficial bacteria growth, 85% constipation improvement rate and reduced fecal odor after 1 week of continuous feeding;

② Digestion promotion: Enhances intestinal peristalsis and nutrient absorption, reduces indigestion;

③ Balanced nutrition: Supplements protein, unsaturated fatty acids, vitamins and minerals;

④ Dental care: Crisp pellets clean tartar and assist dental health.

6. Shelf Stability

① 12-month sealed room-temperature storage, no moisture absorption or breakage, stable taste and flavor;

② Remains crisp after 2-month sealed storage after opening;

③ Microbial indicators comply with GB 13078-2017, no spoilage;

④ Hardness change ≤15%, good moldability.

7. Regulations & Claims

① Complies with GB 2760-2014, GB 13078-2017 and GB/T 31216-2014;

② Claimable: Polydextrose prebiotic, intestinal regulation, fecal odor reduction, good palatability, for small dogs;

③ Passed national feed hygiene sampling inspections, no false claims.

8. Commercial Value

① Cost advantage: 4.0% addition increases per 1.5kg bag cost by only ~0.8%–1.2%, reduces pellet breakage loss by ~10%–14%;

② Premium rate 19%, price ~19% higher than ordinary small dog food;

③ Adapted to pet hospitals, supply stores and e-commerce, rapid market penetration via Myfoodie channels;

④ Covers small dogs and senior small dogs, expands audience.

9. Market Performance

① Launched in 2025, cumulative sales exceed 8 million bags, annual sales revenue 710 million yuan;

② Core audience: Small dog owners aged 25–45, satisfaction rate 95%, pet palatability pass rate 98%, repurchase rate 40%;

③ Pet hospital and supply store sell-through rate 90%, monthly e-commerce sales 500,000 bags, positive rating 96%;

④ Leads "intestinal health and precision" transformation of pet food.

VIII. Summary & Industry Application Prospects

(I) Core Application Summary

This paper covers seven core fields, selecting leading brand cases in each field and analyzing from 9 dimensions. It summarizes core application advantages and commonalities of polydextrose, providing replicable solutions:

1. **Functional Commonalities**

Water-soluble dietary fiber with dual "fiber supplementation + prebiotic" functions, low calorie, no blood glucose elevation, odorlessness, aligning with healthy consumption trends and widely compatible with various products.

2. **Process Adaptability**

High temperature resistance, cooking resistance, extrusion resistance, easy cold-water dissolution, no production line modification required, strong compatibility, retention rate ≥95%, reducing enterprise investment.

3. **Pain Point Resolution**

Precisely solves core industry pain points (delamination, whey separation, staling, etc.), improving product taste, texture and stability.

4. **Commercial Value**

Lower unit price than similar fibers, low addition cost, cost reduction via raw material substitution; differentiated selling points enable 19%–49% premium rate, expanding audience and enhancing competitiveness.

(II) Industry Application Prospects

With the upgrading of healthy consumption, polydextrose application scenarios will further expand, showing three major trends:

1. **In-depth Segmentation**

Penetrate into elderly food, infant complementary food, special medical food and plant-based food to develop precise formulas.

2. **Compound Technology Upgrading**

Compound with prebiotics, probiotics, plant proteins and others to strengthen functional value and product competitiveness.

3. **Internationalization & Standardization**

Align with international standards to upgrade exports, improve domestic addition and claim regulations, and enhance stability and utilization via new technologies.

(III) Application Precautions

Based on case practices, core precautions are summarized for enterprise reference:

1. **Addition Level Control**

Large dosage variation across fields, reasonable control based on product type and functional needs to avoid abnormal taste and texture.

2. **Compound Compatibility**

Pay attention to compatibility with other ingredients, leverage compounding for enhanced effects and avoid conflicting components.

3. **Process Details**

Control addition sequence and temperature to ensure uniform polydextrose dispersion and qualified retention rate.

4. **Compliant Claims**

Strictly abide by national and international standards, make compliant selling point claims and avoid false advertising.

In summary, with its functional, process and commercial advantages, polydextrose has become a core raw material for industrial transformation toward "health, functionality and differentiation". Its future applications will be more diverse, injecting new momentum into the industry.