# China's D-Allulose: Core Position and Competitive Advantages in the Global Supply Chain

## I. Core Position: The "Chinese Engine" of the Global Supply Chain

China has become the core supply-side and growth engine of the global D-Allulose supply chain. It has built a full-chain advantage featuring **large-scale production capacity, domestic-led technology, global export reach, and systematic compliance**, driving the transformation of the global industrial landscape from "Japan-U.S. dominance" to "China-Japan-South Korea collaboration with China leading".

### 1. Production Scale and Supply Capacity

• **Capacity Surge**:

By the end of 2025, China had established stable domestic supply capacity, with total output ranking among the world's top tier. A significant capacity expansion is projected for 2026, covering crystalline-grade, liquid-grade and other multi-specification products, basically satisfying domestic demand while boasting strong export potential.

• **Leading Enterprises as Pillars**:

Companies including Baolingbao, Bailong Chuangyuan, COFCO Biotech, and Jinhe Industrial have built ten-thousand-ton production lines. Among them, top-tier enterprises hold leading global capacity; some have launched large-scale expansion projects, with continuous improvement in capacity concentration. The top three manufacturers dominate the domestic market share.

• **Supply Stability**:

Supported by functional sugar industrial clusters in Shandong, Jiangsu, Hebei and other provinces, a complete industrial chain of starch → enzyme preparation → bioconversion → crystallization has been formed. With high raw material self-sufficiency and strong supply chain resilience, it ensures long-term stable supply to global customers.

### 2. Global Market and Export Landscape

• **Rapid Export Growth**:

In 2025, export volume achieved leapfrog growth with a year-on-year increase of over 50%; export value rose sharply in tandem, up more than 60% year-on-year, accounting for nearly one-fifth of global trade share, making China a core player in global D-Allulose trade.

• **Extensive Regional Coverage**:

Major markets include Japan, South Korea, Southeast Asia, the European Union and the United States, with Japan, the EU and the U.S. as key destinations. Business covers more than 60 countries and regions, supported by a mature international channel network.

• **Comprehensive Export Qualifications**:

All leading enterprises have obtained mainstream global regulatory certifications including U.S. FDA GRAS, EU Novel Food, Japan FOSHU, and KFDA, meeting compliance requirements of diverse markets and enabling "one certification for global access".

### 3. Domestic Industrial Policy Support

• **Regulatory Breakthrough**:

In July 2025, the National Health Commission officially classified D-Allulose as a new food raw material, specifying purity standards and daily intake limits. This fully unlocked the domestic industrialization channel and laid a policy foundation for capacity release and export growth.

• **Improved Standard System**:

In December 2025, the group standard *Guidelines for the Use of D-Allulose as a Food Additive* was implemented, clarifying dosage limits for beverages, dairy products and other categories, eliminating compliance concerns for end-use enterprises and promoting standardized industrial development.

## II. Core Competitive Advantages: Seven Pillars Building Global Barriers

China's competitive edge in D-Allulose stems from synergies across seven dimensions: **technology, cost, industrial chain, compliance, application innovation, capital, and internationalization**, forming an irreplicable comprehensive competitiveness.

### 1. Technological & Process Advantages: Global Leadership in Biomanufacturing

• **Domestic Breakthrough in Enzymatic Technology**:

Enterprises such as COFCO Biotech and Bailong Chuangyuan have independently developed D-Psicose 3-Epimerase (DPEase), breaking overseas technological monopolies. Enzyme activity and thermal stability reach international advanced levels, with conversion rates of some manufacturers ranking among the world's highest.

• **Diversified Process Routes**:

o **Dual-Enzyme Conversion Method**:

Using fructose as raw material and catalyzed by immobilized enzymes, the process is mature and delivers high purity. Bailong Chuangyuan and others have achieved stable ten-thousand-ton production via this route.

o **One-Step Fermentation Method**:

Weiyuan Synthesis globally pioneered the direct fermentation of glucose/sucrose using strain AS10, featuring simplified processes and superior cost efficiency. It has obtained exclusive approval from the National Health Commission and holds strong industrialization potential.

• **Patent and Standard Leadership**:

Top enterprises have filed more than 80 D-Allulose-related patents covering core links such as strains, enzyme

preparations, processes and crystallization. Bailong Chuangyuan and others participate in drafting national/industrial standards, leading the formulation of technical specifications.

## 2. Cost Advantages: Significant Cost Reduction via Scale Effects

• **Raw Material Cost Edge**:

Benefiting from China's global leading production capacity of starch raw materials including corn and wheat, substrates such as high-fructose corn syrup enjoy sufficient supply and stable prices. Raw material costs hold a clear competitive advantage of 20%–30% over Japan and the United States.

• **Cost Reduction via Process Optimization**:

Large-scale production has driven continuous declines in unit costs. Factory prices dropped significantly by nearly 40% in 2024–2025. Through process optimization, leading enterprises achieve costs approximately 15% lower than the industry average.

• **Strengthened Scale Effects**:

Ten-thousand-ton production lines realize diminishing marginal costs. Combined with technologies such as immobilized enzyme recycling and continuous production, production costs are further compressed, delivering globally leading cost performance.

## 3. Industrial Chain Synergy Advantages: Integrated Full-Chain Layout

• **Upstream Raw Material Self-Sufficiency**:

Deeply integrated with corn deep processing and starch sugar industries. Enterprises including COFCO and Baolingbao achieve independent full-chain supply from starch → fructose → enzyme preparations, free from external dependence.

• **Mature Downstream Applications**:

Leading domestic food and beverage brands (Genki Forest, Nongfu Spring, Yili, etc.) took the lead in adoption. In 2025, sales of D-Allulose-containing products saw explosive growth with a year-on-year increase of over 200%, driving upstream demand expansion and forming a positive "application → capacity → technology" cycle.

• **Industrial Cluster Effects**:

Functional sugar industrial clusters in Yucheng (Shandong), Qinhuangdao (Hebei), Zhangjiagang (Jiangsu) and other regions gather more than 40 upstream and downstream enterprises, enabling raw material sharing, technological collaboration and logistics support, greatly reducing overall costs.

## 4. Global Compliance Advantages: Full Coverage of Multi-Market Certifications

• **Comprehensive International Certifications**:

All leading enterprises hold certifications including FDA GRAS (U.S.), EFSA Novel Food (EU), KFDA (South Korea), JECFA (Codex Alimentarius Commission), Halal and Kosher, meeting market access requirements of

major global markets.

• **Advanced Domestic Compliance**:

Following approval as a new food raw material in 2025, a three-tier standard system (national standard + group standard + enterprise standard) was rapidly established, clarifying application scopes and limits. It provides "domestic compliance endorsement" for export products and enhances global recognition.

• **Systematic Compliance Services**:

Enterprises provide supporting toxicological reports, process compliance statements and label compliance solutions, offering one-stop support for downstream customers' global compliance needs and reducing their compliance costs.

## 5. Application Innovation Advantages: Strong Full-Scenario Adaptability

• **Dual Drivers of Functionality & Processability**:

D-Allulose has only 1/10 the calories of sucrose and about 70% of its sweetness. It does not participate in blood glucose metabolism and offers benefits such as blood glucose reduction and fat synthesis inhibition. Meanwhile, it fully enables the Maillard reaction, solving pain points of traditional sugar substitutes including "poor flavor, no browning, insufficient fluffiness", adapting to full scenarios such as baking, beverages, dairy products and pet food.

• **Customized Application Solutions**:

Precise formula design for different categories — up to 100% sucrose replacement in baking; zero-sugar zero-calorie formulations in beverages via compounding with erythritol and steviol glycosides; hypoallergenic and low-calorie solutions for pet food.

• **Verification by Top Customers**:

Strategic cooperation established with global leading brands including Genki Forest, Nongfu Spring, Yili, Danone and Feihe. Products have been validated through large-scale applications, forming a "benchmark effect" and accelerating global market penetration.

## 6. Capital & Capacity Expansion Advantages: Sustained Supply Capacity Enhancement

• **Strong Capital Strength of Leaders**:

Listed companies such as Baolingbao, Bailong Chuangyuan and Jinhe Industrial boast abundant capital and low asset-liability ratios, supporting capacity expansion and R&D investment.

• **Overseas Capacity Layout**:

Bailong Chuangyuan has built a nearly 20,000-ton D-Allulose production base in Thailand; Baolingbao plans large-scale expansion projects. "Overseas factory construction" avoids tariff barriers, approaches overseas markets and improves global supply chain responsiveness.

• **Matching Capacity and Demand**:

Rapid release of domestic capacity aligns with high-speed global demand growth (CAGR approx. 14% in 2025–2030), forming a virtuous cycle that sustains China's core position in the global supply chain.

### 7. International Layout Advantages: Mature Global Channel Network

• **In-Depth Channel Development**:

Leading enterprises have established overseas subsidiaries/offices in North America, Europe, Asia-Pacific, Middle East and other regions, building localized sales and technical service teams to provide full-process services of "raw material supply + application support + compliance consultation".

• **Deepened International Cooperation**:

Strategic partnerships established with global giants such as Cargill, ADM, Tate & Lyle and regional distributors, enabling rapid access to mainstream supply chains. Cooperation with Cargill, DuPont and others in enzyme preparations and application development enhances technological synergy.

• **Enhanced Brand Influence**:

Through global industry exhibitions including FIC, IFT and HiFi, China showcases its D-Allulose technologies and products, establishing an international brand image of "China Smart Manufacturing, cost-effective, compliant and reliable".

## III. Value in the Global Supply Chain: Core Contributions from China

1. **Supply Security**:

   With large-scale capacity and stable supply, China meets over 60% of new global D-Allulose demand, acting as a "stabilizer" of the global supply chain.

2. **Cost Optimization**:

   Technological cost reduction and scale effects drive down global D-Allulose prices, accelerating the popularization of "healthy sugar substitutes" and lowering production costs for downstream enterprises.

3. **Technological Empowerment**:

   Export of domestic enzymatic processes, compliance systems and application solutions drives global industrial technological upgrading and improves overall industry efficiency.

4. **Market Expansion**:

   Through exports and overseas capacity, China explores emerging markets in Southeast Asia, Middle East, Latin America and beyond, expanding global application scenarios and sustaining industrial scale growth.

## IV. Conclusion and Outlook

Relying on five core advantages — **technology, cost, compliance, industrial chain and application innovation** — China has become the core supplier and rule-making participant in the global D-Allulose supply chain. Going forward, with further release of domestic capacity, implementation of overseas capacity layouts and improvement of the global compliance system, China will continue to consolidate its core position, promote D-Allulose to become a mainstream natural sugar substitute worldwide, and provide a “Chinese solution” for the development of the global health industry.