Core Status and Core Competitive Advantages of China's Stevia Sugar in the Global Supply Chain

I. Core Status: The "China Ballast Stone" of the Global Supply Chain

China has evolved into the core supply engine, technological innovation highland and steady growth pole of the global stevia sugar (Steviol Glycosides) supply chain. It has built an industrial ecosystem featuring world-leading production capacity, independently controllable technologies, global export coverage and full-industry chain autonomy. This has shaped a stable global industrial pattern of **China-led and globally supported**, making China an indispensable core pillar for the global natural sugar reduction industry.

1. Production Capacity Scale and Supply Capacity

- Absolute Dominance in Production Capacity: By the end of 2025, China's total stevia sugar production capacity reached 120,000 tons, accounting for more than 68.5% of the global total and ranking first worldwide. The capacity is expected to expand to 140,000 tons in 2026, covering full-specification products including standard-grade, high-purity Reb A (≥95%), and high-end Reb M/Reb D. It fully meets global rigid demand with sufficient reserve capacity.
- Leadership of Leading Enterprise Clusters: Top enterprises such as Chenguang Biotech, Layn Biological, Baolingbao Biology, Shandong Lvjian Biological and Jiangsu Caiwei Biological have constructed 10,000-ton intelligent production lines. The combined capacity of the top five manufacturers accounts for over 75% of China's total domestic capacity. Among them, Chenguang Biotech boasts world-leading single-plant capacity with a domestic market share of 24.5%. Industrial clusters in Shandong, Hebei, Jiangsu and Yunnan maintain top global capacity, with continuous improvement in industry concentration.
- Strong Supply Chain Resilience: Relying on functional sugar industrial clusters in Dezhou (Shandong), Quzhou (Hebei), Nanjing (Jiangsu), Tengchong (Yunnan) and other regions, a complete closed-loop industrial chain has been formed, spanning stevia planting, harvesting, drying, extraction, purification, crystallization and concentration. The self-sufficiency rate of raw materials exceeds 90%. Enterprises within clusters realize raw material sharing, energy support and logistics coordination, ensuring long-term stable bulk delivery for global clients with world-leading risk resistance.

2. Global Market and Export Pattern

- Leading Export Scale: China's stevia sugar export volume hit 23,400 tons in 2025, a year-on-year increase of 13.9%; export value exceeded 582 million US dollars (approximately 4.19 billion RMB), with a year-on-year growth of 15.2%, accounting for **more than 60%** of the global stevia sugar trade volume, securing China's position as the world's largest stevia sugar exporter.

- Extensive Global Coverage: Products are sold to **over 120** countries and regions including North America (36.7%), the European Union (28%), Southeast Asia (22%), Japan and South Korea, the Middle East and Latin America. North America and the EU serve as core high-end markets, while Southeast Asia and the Middle East are emerging growth markets, with in-depth global channel coverage and high customer loyalty.
- Comprehensive International Qualifications: All leading enterprises have obtained mainstream global regulatory certifications including US FDA GRAS, EU EFSA Novel Food, South Korea KFDA, Japan Ministry of Health, Labour and Welfare, JECFA, Halal and Kosher. The global recognition of product compliance enables **one certification for global circulation**.

3. Domestic Industrial Policy Support

- Strong Policy Support: The stevia sugar industry is included in key supported fields such as the **14th Five-Year Plan for Bioeconomic Development** and the **Healthy China 2030 Outline**. The National Health Commission officially recognizes steviol glycosides as safe and legal food additives (GB 2760), applicable to all categories of food and beverages, with continuous release of policy dividends.
- Sound Standard System: The national standard **GB 1886.344-2024 National Food Safety Standard – Food Additive: Steviol Glycosides** was officially implemented in 2024, clarifying core indicators including purity (≥80%), heavy metals and microorganisms. A three-tier standard system led by national standards, supplemented by association standards and refined by enterprise standards has been established to standardize high-quality industrial development.

II. Core Competitive Advantages: Seven Major Barriers Building Global Moats

China's competitive advantages in stevia sugar stem from in-depth coordination across seven dimensions: technology, cost, industrial chain, compliance, application, production capacity and internationalization, forming irreplicable comprehensive competitiveness unmatched by global peers.

1. Technological & Process Advantages: World-Class Biomanufacturing

- Independently Controllable Core Technologies: Leading enterprises including Chenguang Biotech, Yingjia Hesheng and Layn Biological have independently developed integrated technologies combining dual-enzymatic transformation, continuous membrane separation, supercritical extraction and low-temperature crystallization, breaking overseas technological monopolies. The total extraction rate of steviol glycosides has increased from 70% via traditional processes to 85%-92%, and the conversion rate of high-purity Reb M/Reb D exceeds **40%**, maintaining an absolute global leading position.
- World-Leading Process Routes:

  - Synthetic Biology Breakthrough: Enterprises like Yingjia Hesheng adopt engineered strain fermentation to synthesize Reb M/Reb D, breaking reliance on stevia planting. This innovation triples production capacity and cuts costs by 40%. Globally, only three enterprises master this core technology, with China securing one seat.
  - Green & Low-Carbon Production: Replacing traditional resin adsorption with membrane separation and adopting waste heat recycling processes reduce energy consumption by 35% and wastewater discharge by 50%. Certified by EU EU ECO and US USDA Organic, it fully aligns with the global clean label trend.
- Rapid Technological Iteration: Annual R&D investment exceeds 300 million RMB, with patent applications accounting for over 65% of the global stevia sugar sector. From 2023 to 2025, innovative products such as high-purity Reb M (≥98%), zero-aftertaste compound sweeteners and glucosyl steviol glycosides have been launched, continuously leading global technological development.

2. Cost Control Advantages: Full-Chain Cost Reduction & Ultimate Global Cost-Performance

- Raw Material Cost Edge: China's stevia planting area reaches 650,000 mu, ranking first globally. Large-scale planting bases in Shandong, Jiangsu and Anhui achieve a dry leaf yield of 250kg per mu with stable Reb A content of 10%-12%. Adopting the **Company + Cooperative + Farmer** model cuts raw material procurement costs by 30%-40% compared with Paraguay and Kenya, saving over 800 million RMB in annual raw material expenses.
- Cost Reduction via Scale Effect: The annual single-plant capacity of leading enterprises reaches 5,000 tons, far exceeding overseas peers (average 500-1,000 tons per year). Large-scale production reduces unit manufacturing costs by 25%, with remarkable advantages in shared management, logistics and procurement expenses. The comprehensive cost is 35%-45% lower than that of European and American enterprises.
- Energy & Labor Cost Advantages: Leveraging central and western energy bases, industrial electricity and natural gas prices are 40%-50% lower than those in Europe and America. Salaries of skilled technical workers are only one-fifth of their European and American counterparts, ensuring low-cost and high-quality production and forming a powerful price stabilization effect.

3. Full-Industrial Chain Advantages: Closed-Loop Controllability & Stable Supply

- Independent and Controllable Upstream Planting: Twelve standardized planting bases have been established in Shandong, Yunnan and Xinjiang. The high-glycoside variety **Stevia No.9** (Reb A content: 12.5%) is widely promoted, supported by integrated water and fertilizer management and mechanized harvesting. The annual raw material output reaches 180,000 tons with a self-sufficiency rate exceeding 90%, completely eliminating import dependence.

- Intensive Midstream Processing: Fully intelligent production lines covering extraction, purification, crystallization, drying and packaging achieve an automation rate of 90%. It can flexibly produce over 20 products across three major series: **standard grade (Reb A≥80%), high-purity grade (Reb A≥95%) and high-end grade (Reb M/Reb D≥98%)**, delivering world-leading flexible production capacity.
- Optimized Downstream Supporting Collaboration: In-depth cooperation with food equipment, packaging material, logistics and warehousing enterprises enables full-chain collaboration from raw materials to finished products within 30 minutes in industrial clusters. The order delivery cycle is shortened by 50% compared with overseas competitors, achieving the world's fastest customer response.

4. Global Compliance Advantages: Full Qualification Coverage & One-Stop Services

- Comprehensive Global Certifications: All leading enterprises hold full mainstream global certifications including FDA GRAS (covering Reb M/Reb D), EU EFSA, South Korea KFDA, Japan MHLW, JECFA, Halal, Kosher, USDA Organic and EU ECO. Leading the world in both certification quantity and pass rate, they can meet compliance requirements of all countries and regions worldwide.
- One-Stop Compliance Services: Enterprises provide supporting documents including toxicological reports, process compliance statements, label compliance solutions, impurity detection reports and stability test data, fully meeting global clients' compliance needs in one stop. This reduces clients' compliance costs and risks with a 100% compliance approval rate.
- Discourse Power in Standard Setting: China leads the formulation of the international standard ISO 15022 for steviol glycosides and participates in the revision of standards in the EU, the United States and Japan. As a core participant in global stevia sugar standard formulation, China holds decisive discourse power in industry rules.

5. Application Innovation Advantages: Full-Scenario Adaptation & Customized Services

- Irreplaceable Functional Properties: Stevia sugar features 300 times the sweetness of sucrose, only 1/300 of sucrose's calories, zero blood sugar elevation, zero insulin stimulation, anti-caries properties, strong thermal stability (190℃) and pure taste. Perfectly catering to the global trends of sugar reduction and healthy consumption, it is a premium star product in the natural sweetener sector.
- In-Depth Full-Scenario Penetration: Widely applied in sugar-free beverages (48%+), baked foods (20%+), dairy products (15%+), sugar-free chewing gum, health products, oral care, pet food, pharmaceutical excipients and other fields. It adapts to special medical diets for diabetic patients and sugar-free pharmaceutical preparations in the pharmaceutical industry, prevents dental caries in oral care, and meets hypoallergenic and low-calorie demands in pet food.

- Customized Solution Services: Tailored compound formulas (stevia sugar blended with erythritol/maltitol), flavor optimization, stability improvement and cost reduction solutions are provided for different product categories and client demands. This empowers clients to develop differentiated products and forms a positive cycle of **application – production capacity – technology**.

6. Production Capacity Expansion & Capital Advantages: Continuous Enhancement of Global Supply Capacity

- Strong Capital Strength of Leading Enterprises: Listed enterprises including Chenguang Biotech, Layn Biological and Baolingbao Biology boast sufficient capital and low asset-liability ratios. In 2025, leading enterprises invested over 600 million RMB in capacity expansion, technological R&D and green upgrading to further consolidate production capacity advantages.
- Accelerated Capacity Integration: Ongoing industry mergers and acquisitions drive capacity concentration among top players, with the market share of the top five manufacturers rising to **over 75%**, further improving overall industrial competitiveness.
- Precise Matching of Capacity and Demand: The rapid release of domestic capacity and steady growth in global demand (CAGR of approximately 12%-15% from 2025 to 2030) form a virtuous cycle, supporting China's long-term core position in the global supply chain.

7. International Layout Advantages: Dual Leadership in Global Channels and Brand Influence

- In-Depth Global Channel Development: Leading enterprises have established **20+ overseas offices and subsidiaries** across North America, Europe, Asia-Pacific, the Middle East and Latin America, with localized sales and technical service teams delivering one-stop full-process services including raw material supply, application support, compliance consulting and logistics distribution.
- Deepened International Cooperation: Strategic partnerships have been established with global food and pharmaceutical giants such as Coca-Cola, PepsiCo, Nestlé, Mars, Danone and Bayer, as well as regional distributors, facilitating access to mainstream global supply chains. Technical cooperation with DuPont, DSM and other enterprises in strain research and application technology enhances global technological collaboration.
- Prominent International Brand Influence: By participating in global industry exhibitions including FIC, IFT, Anuga, HiFi and Fi Europe, China showcases advanced stevia sugar technologies and high-quality products, building an international brand image of **Chinese intelligent manufacturing, cost-effectiveness, compliance, reliability and low-carbon development** with continuously rising global recognition.

III. Global Supply Chain Value: China's Core Contributions

1. Supply Stabilizer

With **over 68.5%** of global production capacity, China meets **more than 60%** of global stevia sugar demand, stabilizes the supply chain of the global natural sugar reduction industry, and avoids global market shortages and drastic price fluctuations.

2. Price Ballast Stone

Driven by technological cost reduction, scale effects and full-industry chain advantages, China promotes rational pricing of global stevia sugar, accelerates the popularization of healthy sweeteners worldwide, cuts production costs for downstream enterprises and benefits global consumers.

3. Technology Enabler

China independently developed strains, green enzymatic processes, synthetic biological fermentation technologies, compliance systems and customized application solutions are exported globally, driving technological upgrading of the worldwide stevia sugar industry and improving overall industrial efficiency and green manufacturing standards.

4. Market Pioneer

Through export expansion and overseas capacity layout, China further explores emerging markets in Southeast Asia, the Middle East and Latin America, expands global application scenarios of stevia sugar, fuels the sustained growth of the global sugar reduction industry, and boosts the development of global public health undertakings.

IV. Summary and Outlook

Supported by seven core competitive edges covering technology, cost, industrial chain, compliance, application, production capacity and internationalization, China has become the absolute core supplier, technological leader and rule-maker of the global stevia sugar supply chain. In the future, with further release of domestic production capacity, implementation of overseas capacity layout, continuous upgrading of green and low-carbon technologies and improvement of the global compliance system, China will further consolidate its global leading position. It will promote stevia sugar to become a mainstream healthy sweetener worldwide, provide **Chinese solutions** and contribute **Chinese strength** to global sugar reduction initiatives and the development of the global health industry.