China's Position and Core Advantages in the Global Elderberry Supply Chain

Overview

As a natural plant-based active raw material, elderberry is rich in anthocyanins, flavonols, B-vitamins and other nutrients. It is widely used in dietary supplements, food and beverages, functional snacks, personal care, and pharmaceutical adjuvants. Its supply chain covers core links including elderberry cultivation, primary processing, refined extraction, quality inspection, and global distribution.

At present, China has rapidly emerged as a core hub in the global elderberry supply chain, establishing a complete and competitive supply chain system. Within the global supply chain landscape, China has evolved from an early adopter of introduced cultivation and primary processor into a **global core manufacturing center and strategic raw material base** for elderberry.

With core advantages in large-scale cultivation, processing technology upgrading, cost control, and quality standardization, China is deeply involved in the global supply pattern, value orientation, and industrial development trends of elderberry, holding a key position in the global supply chain. It is not only one of the world's largest producers and suppliers, but also a promoter of technological innovation, a participant in standard-setting, and a shaper of the market structure. China directly influences the global supply scale, quality standards, and price trends of elderberry, providing irreplaceable support for the stable development of global downstream industries. Especially under the global consumption trends of "natural plant-based" and "clean label", China's core position continues to stand out.

I. Core Position of China in the Global Elderberry Supply Chain

(1) From the Perspective of Global Industrial Layout and Scale

China has firmly secured its position as a core hub in the global elderberry supply chain. It serves as both the **stabilizer of global capacity and output** and a core raw material base supporting the global industry, becoming the "manufacturing center" of the global elderberry industry. Its dominance is reflected in three dimensions: scale leadership, value upgrading, and pattern control.

According to research by Technavio:

- The global elderberry market expanded steadily in 2025 and is projected to reach **USD 960 million by 2027**, with a **CAGR of 6.72% from 2022 to 2027**, 44% of which comes from Europe.
- Global elderberry extract output reached **3,200 tonnes** in the same period, with an average selling price of **USD 185/kg**.
- China accounts for **over 55% of global elderberry extract output** and **over 50% of global trade volume**,

exporting to more than 70 countries and regions including Europe, America, Southeast Asia, Japan, Korea, and the Middle East.

Among the world's top 20 dietary supplement and food & beverage companies, **14 use China as their core raw material supply base**. End products such as elderberry gummies produced by leading Chinese enterprises sell more than **100 million units globally** per year, mainly exported to North America. China's supply capacity directly determines the global supply-demand balance, acting as the "supply stabilizer" of the global elderberry industry.

With the official approval of elderberry anthocyanins as a **new food ingredient in China in 2025**, China's industrial scale will further expand, consolidating its global leading position.

(2) From the Perspective of Supply Chain Integrity

China is one of the few countries in the world to achieve **full independent control of the "cultivation-processing-testing-distribution" chain** and a core supply chain entity capable of efficient closed-loop management across the entire process.

Unlike most countries that focus on a single link and rely on imported raw materials or processing technology:

- **Upstream**: Leveraging natural endowments in temperate and subtropical regions such as Linyi (Shandong), Jinhua (Zhejiang), and Nanjing (Jiangsu), China has formed a large-scale cultivation pattern dominated by *Sambucus nigra*, supporting a world-leading raw material supply system.
- **Midstream**: Refined processing technology has reached international advanced levels.
- **Downstream**: A global distribution network has been established, supported by complete quality inspection and logistics systems.

The full process from fruit harvesting, pre-treatment, extraction, and refinement to quality inspection, packaging, and global distribution is independently controllable. This integrated "cultivation-processing" layout has freed China from dependence on overseas raw materials, ensured supply chain stability, and provided global downstream customers with **one-stop raw material supply solutions**, making China an irreplaceable core link in the global elderberry supply chain.

(3) From the Perspective of Industrial Voice and Value Upgrading

China has gradually gained **core pricing power and standard discourse power** in the global elderberry supply chain, shifting from "passive participation" to "active leadership" and completing the transformation from "export of roughly processed raw materials" to "export of technology-intensive high-value-added products", with a rising position in the global value chain.

Driven by the approval of elderberry anthocyanins as a new food ingredient, China is improving relevant standard systems and promoting group standards such as *Technical Specifications for Elderberry Extract Production* and *Quality Standards for Elderberry Anthocyanins*, filling gaps in national standards for the whole production process. A three-tier system of "national standards + industrial standards + enterprise standards" is taking shape.

Quality standards of leading Chinese enterprises have become global industry benchmarks, and their pricing directly influences global market price trends. In global industrial cooperation, Chinese enterprises are capable of **leading cooperation rules and participating in industrial standard-setting**, gradually changing the previous pattern dominated by Europe and the US, with growing influence especially in the mid-to-high-end raw material sector.

(4) Industrial Upgrading

In its early stage, China's elderberry industry mainly exported low value-added raw fruits and common powders, positioned at the low end of the global value chain and restricted by raw material regulatory status. Today, with the approval of elderberry anthocyanins, the export structure has been deeply optimized:

- The share of raw fruits and ordinary powders has dropped sharply.
- High value-added products such as elderberry extract, anthocyanin concentrate, cosmetic-grade extract, and end-product gummies have become main export drivers.

In 2025, the global market size of dietary supplement-grade elderberry extract was approximately **USD 420 million**, with China accounting for **over 50%** of exports, becoming a core growth engine.

Chinese manufacturers can now customize products for downstream applications:

- Food-grade elderberry anthocyanins controlled at **2.5%–3.2%**
- Cosmetic-grade products with strict limits on heavy metals and microbial residues

Product added value has increased **4–6 times** compared with the early stage. China is no longer a "low-end supporting player" but a **core global supplier of high value-added elderberry raw materials**, gradually mastering the mid-to-high end of the global value chain.

II. Core Advantages of China in the Global Elderberry Supply Chain

(1) Upstream Cultivation: Large-Scale Layout and Controllable Raw Material Quality

China has built a stable, high-quality raw material supply system based on unique climate conditions and large-scale cultivation.

- Major cultivation areas: Linyi (Shandong), Jinhua (Zhejiang), Nanjing (Jiangsu)
- Dominant variety: *Sambucus nigra*
- Fruit quality meets European Pharmacopoeia standards, with stable anthocyanin content of **2.5%–3.2%**

Leading enterprises implement standardized and organic cultivation, strictly controlling pesticides and fertilizers. Some bases use IoT sensors and satellite remote sensing for precise water and fertilizer management. Raw materials have obtained triple organic certification from the US, EU, and China, meeting global high-end market requirements.

The "**enterprise + base + farmers**" model achieves large-scale and intensive management, reducing raw material costs. Compared with traditional cultivation countries such as the US and Germany, China's *Sambucus nigra* fruit purchasing cost is **35%–45% lower**.

In addition, most bases apply the **"8-hour production rule"**: from harvesting to processing takes only 8 hours, minimizing enzymatic degradation and microbial risks and preserving natural active ingredients, greatly improving raw material stability.

(2) Midstream Processing: Technological Innovation and Large-Scale Production

Refined processing is the core link determining product quality and added value. China leads globally in processing technology, production scale, and process standardization, while facing structural bottlenecks.

Technological Innovation & Large-Scale Production

A mature diversified processing system has been formed, with wide application of advanced technologies:

- Enzymolysis
- Membrane filtration
- Supercritical CO_2 extraction
- Freeze-drying
- High-pressure processing (HPP)

Leading enterprises pioneered the use of **membrane separation and microencapsulation** in elderberry deep processing under normal temperature and aseptic conditions, solving the problem of active ingredient loss caused by traditional high-temperature processing.

- Active ingredient retention rate increased from **60% to over 92%**
- Shelf life extended by **40%**

There are **more than 150 elderberry extract processors** in China, including over 20 large-scale enterprises with single-plant annual capacity of **500 tonnes**. Order delivery cycle is shortened to **10–20 days**, far below the international average of 35 days. Some elderberry gummy producers exceed **100 million units** in annual sales worldwide.

Process Standardization & Technical Bottlenecks

With the approval of elderberry anthocyanins, processors have standardized the whole production process, defining parameters for each stage. However, gaps remain in high-end fields:

- High-purity anthocyanin extraction (purity ≥ 98%)
- Separation of specific active ingredients

Core extraction technologies for ultra-high-purity products have not yet achieved full independent breakthroughs, resulting in a structural mismatch: **surplus mid-to-low-end capacity, insufficient high-end capacity**. This bottleneck is both a challenge for industrial upgrading and a core direction for future technological breakthroughs.

(3) Quality Control: Complete Standards and Strong Testing Capabilities

China has established a **full-chain quality control system**, supporting global supply chain trust and accelerating alignment with international standards.

Standard System

A three-tier standard system ("national + industrial + enterprise") covers raw material quality, processing technology, purity, active ingredient content, heavy metals, and microbial limits. Some enterprise standards specify:

- Elderberry extract anthocyanin content ≥ **25%**
- Moisture ≤ **8.0 g/100 g**
- Heavy metals ≤ **10 ppm**

All indicators reach international advanced levels. China actively participates in international standard discussions, but still lacks dominance in core global standard formulation and high-end certification access, which remain largely controlled by European and American enterprises.

Testing Capabilities

Leading enterprises are equipped with advanced testing equipment:

- HPLC
- GC
- Atomic absorption spectrophotometer

They can accurately detect anthocyanins, flavonols, heavy metals, and microorganisms at ppm level, complying with regulations such as US FDA and EU requirements. A **full-process traceability system** is implemented, with some enterprises using blockchain for "one-item-one-code" traceability. Records are kept for at least 3 years. Products have obtained international certifications including US FDA, EU ECOCERT, and Japan JAS, breaking technical barriers in international trade.

(4) Cost and Supply Chain Efficiency: Full-Chain Synergy

Compared with other global suppliers, China maximizes cost control and supply chain efficiency through full-chain synergy, one of its most competitive advantages.

Cost Control

- Large-scale cultivation reduces raw material costs
- Large-scale production and technological iteration lower processing costs
- Complete logistics and distribution cut circulation costs

Comprehensive cost is **45%–55% lower** than US and European enterprises, providing significant cost-performance advantages.

Supply Chain Efficiency

An integrated system of "cultivation base – processor – logistics – global distribution" has been formed. Industrial clusters in Shandong, Zhejiang, and Jiangsu enable resource sharing.

- Raw material transportation time minimized (8 hours from harvest to processing)
- Cold chain coverage in core cities reaches **92%**
- Rapid response to global demand changes and customized requirements

China dominates emerging markets (Southeast Asia, Middle East, Africa) with a market share of **over 75%**, while penetration in European and American markets continues to rise.

III. Global Market Structure and Supply Chain Risk Resilience

(1) Market Structure: Dual Challenges of Regional Divergence and Standard Barriers

China's global elderberry market layout shows a pattern of **"strong in emerging markets, difficult to break through in mature markets"**.

- **Emerging markets (Southeast Asia, Middle East, Africa)**:

China holds a dominant share of **over 75%**, accounting for more than 88% of local imports, favored for cost-performance and fast delivery.

- **Mature markets (Europe, US, Japan, Korea)**:

Penetration is relatively low due to strict technical standards, certification thresholds, and regulatory barriers. Chinese products are mostly concentrated in the mid-to-low end, with limited breakthroughs in the high-end sector. The core constraints are strict technical and certification requirements in mature markets and gaps in high-end technologies. Meanwhile, consumer education in the domestic market remains at an early stage, with untapped potential.

(2) Risk Resilience: Comprehensive Support for Supply Chain Security and Industrial Resilience

China's elderberry industry has strong supply chain security and industrial resilience based on its full independent industrial chain, but hidden risks remain.

Supply Chain Security

- **High-end raw material dependence**: Core technologies for high-purity elderberry anthocyanins are not fully independent, requiring small imports from Europe and the US, exposing supply and cost volatility risks.
- **International trade policy fluctuations**: Tariff adjustments and trade barriers may impact exports, especially to mature markets.
- **Natural risks**: Climate, pests and diseases may affect raw material supply. Cultivation varieties are relatively single, reducing anti-risk capacity.

Industrial Resilience

The complete "cultivation-processing-testing-distribution" chain is the foundation of industrial resilience. Leading enterprises are building competitive barriers:

- Upstream: Expanding cultivation bases and optimizing varieties
- Downstream: Developing deep processing and branded end products
- Digitization: Adopting AI intelligent replenishment to shorten inventory cycles

This full-chain layout provides strong buffer capacity against global market fluctuations and raw material price hikes, maintaining China's role as the **stabilizer of the global elderberry industry**.

IV. Summary and Outlook

In summary, China has established an irreplaceable position as a **global core manufacturing center and strategic raw material base** in the elderberry supply chain:

- **Macro**: Leading global supply, driving value upgrading, and gaining core discourse power
- **Micro**: Core competitiveness from large-scale technology, high-quality control, and cost-performance, while addressing high-end technical bottlenecks
- **Market**: Strong dominance in emerging markets and steady breakthroughs in mature markets
- **Risk**: Full-chain layout enhances resilience, with hidden risks gradually under control

This position stems from unique natural conditions, industrial policies, enterprise innovation, and full-chain layout, especially boosted by the approval of elderberry anthocyanins as a new food ingredient. China continues to provide global downstream industries with high-quality, low-cost, and fast-delivery elderberry products, serving as a core guarantee for the stable development of dietary supplements, food & beverage, personal care and related sectors worldwide.

Future Outlook

Against the backdrop of growing global "natural plant-based" and "clean label" trends and rising recognition of elderberry's health benefits, China will further consolidate its core position and enhance industrial influence by focusing on five directions:

1. **Break through high-end extraction bottlenecks** to achieve independence in high-purity active raw materials
2. **Promote industrial upgrading**, expand high value-added exports, and develop the domestic market
3. **Accelerate standard internationalization** to integrate Chinese standards into global systems and break mature market barriers
4. **Strengthen full-chain coordination**, optimize varieties, and improve supply chain anti-risk capacity
5. **Optimize market layout**, deepen emerging markets, break mature market barriers, and diversify product forms

China will ultimately transform from a **"major raw material supplier" to a "global industrial power"** in elderberry, providing stable, efficient, and high-quality support for the global supply chain and leading the high-quality development of the global elderberry industry.