# China's Position and Core Competitive Advantages in the Global Artemisia Argyi Extract Supply Chain

## Foreword

Extracts of *Artemisia argyi* Levl. et Van. are rich in volatile oils, flavonoids, and other active ingredients, with wide applications in pharmaceuticals, cosmetics, agriculture, and other sectors. A complete global supply chain has been formed covering **raw material cultivation, processing and extraction, quality control and trade, and end-use applications**. As one of the native origins of *Artemisia argyi*, China has become the core hub of the global *Artemisia argyi* extract supply chain by virtue of its natural endowments, industrial supporting systems, technological innovation, and large-scale advantages, dominating the global supply-demand balance, price trends, and technological iteration. Based on authoritative industry data and academic achievements, this report systematically analyzes China's core position and dissects its comprehensive competitive advantages, balancing academic rigor and commercial practicality to provide precise references for industry stakeholders.

## 1 China's Core Position in the Global Artemisia Argyi Extract Supply Chain

The global *Artemisia argyi* extract supply chain consists of three core segments: **upstream raw material supply, midstream extraction and processing, and downstream trade and distribution**. China demonstrates irreplaceable competitiveness across all segments, forming an all-round leading pattern characterized by **raw material dominance, processing centrality, and trade hub status**, which can be precisely defined from three dimensions.

### 1.1 Upstream Raw Material Supply: Global Core Production Area with Superior Quantity and Quality

Regions south of the Qinling-Huaihe Line and the middle and lower reaches of the Yellow River Basin (including Hubei, Henan, Jiangxi, and other provinces) provide optimal temperature, precipitation, and soil conditions for *Artemisia argyi* cultivation, making them the world's most suitable planting areas with large-scale and standardized cultivation clusters. According to QYResearch, global production of *Artemisia argyi* extract reached approximately 3,800 metric tons in 2024. China accounts for over 75% of the global planting area and 80% of raw material output, directly determining the stability of the global raw material supply.

In terms of quality, supported by traditional cultivation experience and the promotion of GAP standards, the contents of core active ingredients (chlorogenic acid, eupatilin, etc.) in Chinese *Artemisia argyi* are significantly higher than those in Korean, Japanese, and European producing areas. The average content of chlorogenic acid reaches 12.7%, and eupatilin reaches 9.3%. National-level cultivation clusters such as Qichun in Hubei and Nanyang in Henan include several bases certified by organic and EU GAP standards, which can directly meet high-end global raw material demands and further consolidate China's upstream core position.

### 1.2 Midstream Extraction and Processing: Leading Production Capacity and World-Class Technical Level

Extraction and processing constitute the core link of the supply chain, directly determining product purity, active ingredient retention rate, and added value. Leveraging raw material advantages and a sound industrial supporting system, China has built the world's largest and most diversified processing cluster, accounting for over 85% of

global processing capacity. It enables large-scale production via multiple processes including water extraction and supercritical $CO_2$ extraction, covering low-, medium-, and high-purity products to meet global demand at different levels.

Technologically, China has transitioned from extensive extraction to digitalized and refined production, with core indicators reaching international advanced levels:

- 65% of samples from major producing areas are covered by HPLC-DAD and GC-MS multi-dimensional fingerprinting, with active ingredient control accuracy within ±5%;
- After industrial deployment of the digital twin system for multiphase countercurrent extraction, mass transfer efficiency reaches 94.7% and unit energy consumption decreases by 28.7%.

Meanwhile, the research and development of high-end deep-processed products such as microencapsulated extracts has driven China's transformation from a **major processing country to a strong processing power**.

### 1.3 Downstream Trade and Distribution: Global Export Hub with Diversified Market Coverage

China is the world's largest exporter of *Artemisia argyi* extract, serving as a trade hub connecting upstream raw materials, midstream processing, and global end markets. According to the China Chamber of Commerce for Import and Export of Medicines and Health Products, China's export value of *Artemisia argyi* extract accounted for over 60% of the global total in 2023. Among these, high-quality products produced by supercritical $CO_2$ extraction accounted for 45% of total export value, with a unit price of 350–500 RMB per kilogram.

Export markets cover more than 80 countries and regions, forming a structure of **high-end dominance, midstream support, and low-end supplementation**:

- Europe (35%), Asia (40%), and North America (15%) are core markets;
- High-end products comply with EU Regulation EC No 396/2005 and US FDA standards, with solvent residues below 10 ppm.

Export hubs centered on ports such as Shanghai and Guangzhou, combined with cross-border e-commerce models, have further improved trade efficiency and consolidated China's core position in global trade.

## 2 Core Competitive Advantages of China in the Global Artemisia Argyi Extract Market

China's leading position in the supply chain stems from the synergy of five dimensions: **resources, technology, industry, cost, and market**. Together, they form a comprehensive advantage featuring a solid foundation, distinct barriers, outstanding efficiency, and strong competitiveness, with both technical barriers and commercial value that are difficult to replicate.

### 2.1 Resource Advantages: Unique Endowments and Standardized Cultivation Systems

The core lies in the dual support of **irreplaceable natural endowments and a complete standardized cultivation system**.

- Naturally, the climate and soil conditions in the transition zone between subtropical and warm temperate zones result in volatile oil content (1.2%–1.5%) in Qichun *Artemisia argyi* far exceeding that in Korean and Japanese producing areas, with flavonoid content 30% above the global average.
- In cultivation, a full-process standardized system covering **variety breeding, cultivation management,**

**harvesting, and storage** has been established. High-yield and high-quality varieties have been developed, and large-scale cluster effects are prominent under GAP-compliant cultivation, ensuring raw material stability while reducing production costs.

### 2.2 Technological Advantages: Innovation-Driven Leadership in Both Quality Control and Processing

Technological innovation builds core barriers and forms a virtuous cycle of **process upgrading, improved quality control, and enhanced added value**.

1. **Efficient and eco-friendly extraction processes**: Large-scale application of advanced technologies such as supercritical $CO_2$ extraction and membrane-coupled separation achieves extract purity above 95% with no solvent residues, aligning with global green industrial trends.
2. **Internationally aligned quality control systems**: Equipped with high-end testing instruments including HPLC and GC-MS with detection precision at the ppm level; 65% of major producing areas adopt multi-dimensional fingerprinting; blockchain traceability further enhances quality credibility.
3. **Breakthroughs in deep processing**: High-end products such as microencapsulated extracts deliver 5–10 times higher added value than traditional crude extracts, breaking international monopolies.

### 2.3 Industrial Advantages: Cluster Agglomeration and Complete Supply Chain Support

An integrated industrial chain covering **cultivation, processing, testing, trade, and R&D** has been formed, with core strengths in industrial clustering and supporting capacity.

- Industrial clusters such as Qichun (Hubei) and Zhangshu (Jiangxi) gather more than 200 related enterprises, enabling centralized resource allocation, reducing operational and transaction costs, and improving industrial risk resistance.
- Professional warehousing and logistics ensure efficient circulation; national-level testing centers provide international-standard testing services; industry-university-research cooperation sustains continuous technological innovation.

### 2.4 Cost Advantages: Scale-Driven Global Leadership in Cost-Performance Ratio

Cost advantages originate from economies of scale and complete supporting systems, representing one of China's key global competitive strengths.

- Upstream large-scale cultivation reduces raw material costs by 30%–40% compared with international peers, with per-unit yield over 20% higher.
- Midstream large-scale processing lowers costs such as equipment depreciation and energy consumption by 25%–35% compared with international enterprises.
- Combined with relatively low labor and industrial supporting procurement costs, Chinese products are priced 20%–30% below international equivalents with comparable or superior quality. This prominent cost-performance advantage allows China to dominate the mid-to-low-end market and capture share in the high-end market.

### 2.5 Market Advantages: Strong Domestic Demand and Diversified Export Structure

Dual support from domestic demand and exports provides broad development space.

- **Domestic market**: China is the world's largest consumer, with a market size of 4.73 billion RMB in 2024, projected to reach 12.86 billion RMB by 2030 (CAGR 18.2%). Strong demand in pharmaceuticals, cosmetics, and agriculture provides stable industrial support.
- **Export market**: Covering more than 80 countries and regions, with a tiered layout of high-end (Europe, US, Japan), mid-end (Southeast Asia), and low-end (Africa, South America) markets. The Belt and Road Initiative facilitates expansion into emerging markets and reduces risks from single-market volatility.

## 3 Summary and Outlook

In summary, China holds an absolutely dominant position in the global *Artemisia argyi* extract supply chain as the world's core raw material supplier, largest processing base, and primary trade hub. Its industrial development directly shapes the global industrial landscape. The five core advantages reinforce one another hierarchically and synergistically:

- Resource advantages lay the foundation;
- Technological advantages build barriers;
- Industrial advantages improve efficiency;
- Cost advantages strengthen competitiveness;
- Market advantages expand development space.

Together, they form an irreplaceable comprehensive competitive pattern.

Regarding industry trends, growing global demand for natural and healthy products drives market expansion. Global sales revenue is projected to increase from USD 323 million in 2024 to USD 474 million in 2031 (CAGR 5.60%). In the future, China's industry will enhance the share of high-end products through technological innovation and expand global markets via the Belt and Road Initiative and cross-border e-commerce, while facing challenges such as technical trade barriers from Europe and the US and product homogenization.

To address these challenges, efforts should be made to increase R&D investment, strengthen brand building, improve standard systems, and enhance industrial collaboration to promote industrial transformation toward **scaling, high quality, and internationalization**. Overall, China's core position is unshakable. It will continue to consolidate global leadership, drive high-quality development of the global *Artemisia argyi* extract industry, and support the internationalization of China's traditional Chinese medicine industry.