China's Core Position and Competitive Advantages in the Global Pueraria Lobata Extract Supply Chain

Foreword

Pueraria lobata extract, with **puerarin and total flavonoids** as its core active ingredients, is an essential natural raw material for cardiovascular and cerebrovascular health, alcohol metabolism and liver protection, menopausal symptom management, functional foods, and cosmetics. It aligns with the global trend of health consumption and natural ingredient preference.

Against the background of industrial upgrading of the global plant extract industry and accelerated internationalization of traditional Chinese medicine, China has become the **absolute core pillar** of the global pueraria lobata extract industry by virtue of its authentic native resources, closed-loop full-chain layout, stringent quality control, and leadership in technical standards. China possesses irreplaceable supply chain dominance and uncopyable core competitiveness, serving as a reliable long-term strategic partner for global customers.

Part One China's Core Position in the Global Pueraria Lobata Extract Supply Chain

I. Absolute Dominance in Global Capacity and Supply: The Stabilizer of the Industry

China is globally recognized as the **largest producer, largest exporter, and largest raw material supplier** of pueraria lobata extract, firmly controlling the initiative of global supply and holding an absolutely dominant position in the industry.

- **Monopoly in global production scale**: In 2025, the total global output of pueraria lobata extract was approximately 37,500 tons, of which China accounted for over 30,000 tons, representing **more than 80%** of the global share. Annual export volume reached 1,850 tons, accounting for over 70% of global trade volume, making China the core source of global market supply.
- **Unmatched raw material resources**: In 2025, China's pueraria lobata planting area covered about 1.5 million mu, with a total fresh root output exceeding 2 million tons, accounting for **over 75%** of the global total. Core production areas are concentrated in Guangxi (38% of the national total), Jiangxi, Hunan, Hubei, and Yunnan. Among them, Teng County in Guangxi and Zhongxiang in Hubei are honored as "Hometowns of Chinese Pueraria Lobata". China is the **only country** capable of large-scale, regular, and high-volume stable supply.
- **Unshakable supply discourse power**: Major global pharmaceutical, health product, and cosmetic enterprises regard China as their core raw material base. China's supply volume and

price trends directly determine the operation and market conditions of the global industrial chain, acting as the **stabilizer** of the global pueraria lobata extract supply chain.

II. Closed-Loop Full-Chain Layout: The Only Fully Independent and Controllable Industrial Hub

China has built the **world's most complete industrial chain** for pueraria lobata extract, realizing a closed-loop operation covering **cultivation – primary processing – refined extraction – quality inspection – global distribution**, with no external dependence or supply interruptions, and controllability far exceeding other production regions worldwide.

- **Upstream raw material sector**: GAP-standardized cultivation bases have been established in Guangxi, Jiangxi, Hunan, Yunnan and other regions, with a raw material self-sufficiency rate of **82.7%**, freeing the industry from reliance on wild resources and imported materials. The "Company + Base + Farmer" model is widely adopted, with more than 120 standardized bases covering 450,000 mu.
- **Midstream processing sector**: Adequate GMP-certified production capacity is available. Leading enterprises have formed **ten-thousand-ton raw material processing and thousand-ton extraction capacities**. Green technologies such as supercritical CO_2 extraction, macroporous resin chromatography, and membrane separation are widely applied, with product purity covering the full gradient of **15%–98%**.
- **Downstream circulation sector**: Supported by a global logistics network and professional quality inspection system, with well-developed pre-processing centers at production areas, the delivery cycle is shortened to **within 7 days**, with response speed far exceeding that of Southeast Asia, South America and other regions.
- **Comparative advantages**: Unlike the model of scattered cultivation, segmented processing and high supply chain disruption risks in overseas countries, China implements integrated cultivation, breeding and processing. The time from raw material harvesting to production is extremely short, maximizing the retention of core active ingredients. China leads the world in industrial chain integrity, operational efficiency and risk resistance.

III. Leading Industry Standards and Mastery of Global Pricing and Regulatory Power

China has transitioned from an industry follower to a **standard leader**, establishing a three-level quality control system consisting of national standards, industry standards and enterprise internal control standards. Its core indicators are stricter than international general standards, setting a global benchmark for industry quality.

- **Leadership in international standards**: In February 2026, **ISO 24976:2026 Traditional**

Chinese Medicine – Pueraria Lobata, developed under China's leadership, was officially published, becoming a unified yardstick for global pueraria lobata quality and trade, marking China's mastery of international standard-setting power.

- **Leadership in domestic standards**: The 2020 edition of *Pharmacopoeia of the People's Republic of China* established for the first time a monograph for pueraria lobata extract, requiring total flavonoids ≥ 80% and puerarin ≥ 50%. The new industry standard *Quality Grade of Pueraria Lobata Products* implemented in 2025 classifies products into premium, first-class and second-class grades. Premium products require puerarin ≥ 8.0%, total flavonoids ≥ 12.0%, and heavy metal lead ≤ 0.5 mg/kg, forcing industry quality and efficiency improvement.
- **Mastery of pricing power**: China's market transaction prices and raw material ex-factory prices directly serve as the benchmark for global market pricing. Enterprises certified with FDA GRAS and EU Novel Food enjoy an export unit price **22% higher** than non-certified ones, completely breaking overseas pricing monopoly.

IV. Coverage of Global Markets: A Core Node of International Trade

China's pueraria lobata extract products cover **more than 90% of the world's mainstream consumer markets**, with a mature and complete global supply network.

- **Penetration in high-end markets**: Penetration has steadily increased in high-end markets such as Europe, the United States, Japan and South Korea, making China a core supplier to international giants including GlaxoSmithKline, Amway and Shiseido. In 2025, high-purity products (puerarin ≥ 40%) accounted for **61.3%** of exports, with an average price of 1,050 USD/kg.
- **Dominance in emerging markets**: The market share exceeds 80% in emerging markets including Southeast Asia, Latin America and the Middle East. Following the entry into force of RCEP, exports to ASEAN enjoy zero tariffs. In 2023, exports to ASEAN increased by **54.2%** year-on-year, accounting for 33.7% of total exports and becoming the largest single regional market.
- **Dual-support pattern**: Driven by the booming domestic health consumption demand, China's domestic market scale reached 5 billion yuan in 2025, forming a dual support of **"export + domestic demand"**. China has become a core link connecting raw material supply, processing and manufacturing, and global terminal consumption, with an irreplaceable position as an international trade hub.

V. High-End Industrial Upgrading: Moving into the Mid-to-High End of the Global Value Chain

China's pueraria lobata extract industry has completely escaped the low-end rough processing pattern,

completed quality upgrading and structural transformation, with high-end refined products becoming the main export force.

- **Optimized product structure**: In 2025, pharmaceutical-grade and high-purity premium products (puerarin ≥ 98%) accounted for **over 60%** of the global market for similar products. Low-impurity, high-activity products are widely recognized by overseas high-end markets.
- **Industrial chain extension**: Downstream expansion has been made to develop terminal products such as puerarin lyophilized powder, pueraria enzyme, functional beverages and tablet candies, greatly enhancing product added value. Domestic pueraria-based health products and cosmetics are exported worldwide, advancing into the mid-to-high end of the global value chain.
- **Construction of technological barriers**: In 2024, China accounted for **73%** of global PCT patent applications related to pueraria lobata extract. Advanced technologies such as supercritical extraction and nano-encapsulation have achieved industrial application, with technical strength comparable to international giants.

VI. Strong Supply Chain Resilience and Exceptional Risk Resistance

Relying on full-chain independent controllability and decentralized layout across multiple production areas, China's pueraria lobata extract supply chain demonstrates outstanding risk resistance, effectively coping with climate fluctuations, logistics blockages, trade changes, policy adjustments and other external shocks.

- **High independent controllability**: Core cultivation techniques and extraction processes are independently controllable with extremely low external dependence. Sufficient capacity flexibility and abundant raw material reserves enable rapid supply adjustment in response to market fluctuations.
- **Comprehensive quality system**: A full-process traceability system is implemented covering cultivation, production, processing and inspection, with traceability available for every batch. The industry is regulated orderly, with an export random inspection pass rate of **100%**.
- **Outstanding risk resistance**: Decentralized layout across multiple production areas reduces single-region risks. Even amid market volatility and external changes, China can ensure long-term stable global supply. The supply chain features strong resilience and high security, supporting a solid and sustainable industrial position.

Part Two Core Competitive Advantages of Chinese Pueraria Lobata Extract in the Global Market

I. Native High-Quality Resource Advantage: Concentrated Authentic Origins with Stable Supply Guarantee

- **Authentic resource endowment**: As the native origin of pueraria lobata, China boasts abundant germplasm resources including *Pueraria lobata* and *Pueraria thomsonii*. With concentrated authentic production areas, subtropical monsoon climate and selenium-rich soil are ideal for pueraria lobata growth. The raw material has a puerarin content of 0.8%–2.5% (over 2.0% for high-quality varieties) and low pesticide residues, with quality far exceeding that of Southeast Asian and South American origins.
- **Large-scale stable supply**: More than 120 national GAP-standardized cultivation bases ensure an annual raw material output of over 2 million tons, enabling **year-round stable bulk supply** and completely eliminating risks of supply disruption, shortages and sharp price hikes. This presents prominent advantages over scattered cultivation, volatile supply and inconsistent quality in other countries.
- **High resource barriers**: Zhongxiang Pueraria Powder, Teng County Pueraria Lobata and other products have obtained national geographical indication certification, with export premiums doubled. Cultural endorsement of traditional Chinese medicine enhances product added value, building a brand perception that **"Chinese Quality = Global Trust"** with uncopyable and unsurpassable resource barriers.

II. Full-Chain Efficient Capacity Advantage: One-Stop Supply for Cost Reduction and Convenience

- **Closed-loop industrial chain**: Realizing **direct supply from bases and direct shipment from factories**, redundant intermediate links are eliminated, avoiding multi-layer middleman markups and simplifying the procurement process. The entire process from raw material cultivation to finished product delivery is controllable, accepting orders of conventional specifications, high purity, customization and small-batch refined production.
- **Flexible production capacity**: Leading enterprises possess ten-thousand-ton raw material processing and thousand-ton extraction capacities, rapidly responding to customers' demand for **"small batches, multiple varieties, fast delivery"**. Production area pre-processing centers integrate washing, slicing and drying processes, reducing unit processing cost by 15% and shortening delivery cycle to within 7 days.
- **One-stop solutions**: Providing one-stop procurement services covering raw material supply, extract production and terminal product customization, greatly simplifying customers' supply chain processes, reducing communication, procurement and time costs, improving overall operational efficiency and adapting to diverse procurement demands.

III. Stringent Quality Control Advantage: Full Compliance and Unimpeded Global Access

- **Three-level quality control system**: Implementing strict three-level control based on national, industry and enterprise internal standards, tightly controlling the content of active ingredients including puerarin and total flavonoids, as well as harmful impurities such as heavy metals, pesticide residues, solvent residues and microorganisms, with batch stability RSD < 1%.
- **Complete international certifications**: Approximately **30%** of China's pueraria lobata extract manufacturers have obtained international certifications including US FDA GRAS, EU Novel Food, Kosher and Halal. Products fully comply with regulatory requirements of major markets such as the EU, US, Japan and Australia, with complete compliant quality inspection and customs clearance procedures to smoothly break through trade barriers.
- **Full-process traceability guarantee**: Adopting blockchain traceability and AI parameter optimization systems covering the entire cultivation, production, processing and inspection chain, with traceable verification for every batch. Quality is controllable and safe, providing customers with full quality security and compliance assurance.

IV. Ultimate Cost Performance Advantage: High Quality at Competitive Prices for Enhanced Profitability

- **Cost reduction through scale effect**: Relying on large-scale cultivation, cluster production and intensive management, the whole chain achieves cost reduction and efficiency improvement. The comprehensive production cost is **50%–65% lower** than that in Europe, the US, Japan and South Korea, presenting significant price advantages.
- **High-quality and competitively priced competitiveness**: At the same quality level, Chinese supply is **20%–30% cheaper** than international counterparts; at the same price, Chinese products feature higher activity and superior quality. High-purity products achieve a gross profit margin of over 60%, ranking first globally in cost performance.
- **Profit space enhancement**: Balancing high quality and favorable prices, Chinese products help global customers control procurement costs, improve profit margins and market competitiveness of terminal products, achieving the procurement goal of high quality at low cost.

V. High-End Technological Product Advantage: Flexible Customization for Full-Scenario Adaptation

- **Advanced technological leadership**: The industry widely adopts cutting-edge technologies including supercritical CO_2 extraction, macroporous resin chromatography, membrane separation coupling and nano-encapsulation. The puerarin recovery rate stably exceeds **82.5%**, with impurity removal rate of high-end products reaching over 99%, greatly improving

bioavailability.

- **Customized service capability**: Precise adjustment of active ingredient content and customized exclusive specifications (full gradient of puerarin 15%–98%) are available according to customer demands. Supporting personalized R&D, small-batch customization and bulk supply, the products meet the needs of pharmaceuticals, health products, functional foods, cosmetics and other fields.
- **Leading technical service level**: Leading enterprises have cooperated with universities to establish the **Chinese Pueraria Germplasm Bank** storing 137 germplasm resources. Possessing core patents such as in vitro rapid propagation and molecular marker-assisted breeding of pueraria lobata, China ranks among the world's top in technical service level.

VI. Stable Supply Chain Guarantee Advantage: Long-Term Reliability for Worry-Free Cooperation

- **Sound industrial layout**: Five core industrial clusters have formed in Guangxi, Jiangxi, Hunan, Hubei and Yunnan, with leading enterprises providing capacity support. Decentralized layout across multiple production areas reduces risks. Abundant raw material and capacity reserves are less constrained by external environment.
- **Strong risk resistance**: The supply chain has exceptional buffer and recovery capabilities amid market fluctuations, logistics changes and trade policy adjustments. Leading the world in supply stability and sustainability, it effectively ensures uninterrupted customer production and operation.
- **Bright long-term development prospects**: Pueraria lobata is included in the *14th Five-Year Plan for the Development of Traditional Chinese Medicine* and *Biological Economy Development Plan*, and officially listed in the medicinal and edible homology catalog, supported by favorable policies. With the development of the global health industry and accelerated internationalization of traditional Chinese medicine, the industry enjoys broad long-term prospects. Choosing Chinese pueraria lobata extract means partnering with a **long-term stable and reliable ally**.

Conclusion

China holds an **absolutely dominant and irreplaceable core position** in the global pueraria lobata extract supply chain. With six core advantages in resources, capacity, quality, cost, technology and guarantee, China has become the preferred partner for global customers.

In the future, China will continue to deepen industrial development, upgrade processes, strictly control quality, and optimize services. With stable supply, excellent quality, efficient delivery and comprehensive support, China will join hands with global partners for win-win development and build a robust, efficient and sustainable global pueraria lobata extract supply chain.