# Competitive Advantages and Future Market Development Outlook of Ginseng Extract Products

As a traditional and precious Chinese medicinal herb, ginseng has been verified for its medicinal and health-preserving value for thousands of years. Ginseng extract is a concentrated product rich in active ingredients obtained by extracting and concentrating various parts of ginseng through modern physical, chemical or biological technologies. Its core active ingredients are ginsenosides (such as Rg1, Rb1, Rg3, etc.), and it also contains various functional components such as flavonoids and polysaccharides, which are widely used in medicine, health food, cosmetics, feed additives and other fields. Currently, benefiting from the upgrading of the big health industry, the advancement of traditional Chinese medicine modernization and the diversification of consumer demand, the ginseng extract industry is facing development opportunities. Starting from the core competitive advantages, this paper combines the industry status quo and multiple driving factors to look forward to the market development trends, providing professional reference for industry practitioners and investors.

## I. Core Competitive Advantages of Ginseng Extract Products

The core competitiveness of ginseng extract originates from five dimensions: raw materials, technology, efficacy, compliance and industrial chain. It has both resource scarcity and market differentiation, forming a unique advantage system different from other plant extracts.

### (I) Raw Material Endowment Advantage: Supported by Authentic Producing Areas and Controllable Quality

Northeast China, such as Jilin and Liaoning provinces, has become the core authentic producing area of ginseng in the world due to its suitable climate and black soil resources. Among them, Changbai Mountain ginseng is a national geographical indication product, with significantly higher active ingredient content than other producing areas. At present, domestic ginseng planting is transforming towards standardization, the number of GAP (Good Agricultural Practices) planting bases is continuously increasing, and blockchain technology has realized the full traceability "from seed to product". Data shows that the output of ginseng in major northeast producing areas accounts for 85% of the country, and the proportion of organic planting is 32%, providing a stable supply for high-quality extracts.

### (II) Technical Barrier Advantage: Process Iteration and Added Value Improvement

Extraction and purification technology is the core barrier of the industry. At present, it has upgraded from the traditional water extraction and alcohol precipitation method to modern green technologies such as supercritical $CO_2$ extraction and enzyme-assisted extraction. Supercritical $CO_2$ extraction can make the product purity reach more than 90%, enzyme-assisted extraction can increase the yield of ginsenosides by more than 30%, and membrane separation technology can realize precise classification of products. Cutting-edge technologies such as AI process optimization and nano-encapsulation are

being promoted for industrialization. The number of patents related to the industry has increased by more than 170% in five years, and leading enterprises have built high entry thresholds relying on technological advantages.

**(III) Efficacy Value Advantage: Multi-domain Adaptation and Rigid Demand**

Modern pharmacology has confirmed that ginseng extract has multiple effects such as immune regulation, anti-oxidation and anti-fatigue, with high safety and adaptation to multiple downstream fields. In the medical field, it is used for chronic disease prevention and control and post-operative rehabilitation; in 2023, the market scale of ginseng-based health food reached 12.139 billion yuan, and it is expected to increase to 15.104 billion yuan by 2028; it is widely used in the cosmetics field, with the market scale of related skin care products reaching 4.76 billion yuan in 2023, with a compound annual growth rate of 18.3%; the feed additive field has been included in the national catalog, and the demand is gradually being released.

**(IV) Compliance and Standard Advantage: Policy Escort and Standardized Development**

China has gradually improved the standard system for ginseng extracts. In 2024, the National Medical Products Administration issued the "Special Provisions on the Administration of Traditional Chinese Medicine Standards", the State Administration for Market Regulation included ginseng in the catalog of health food raw materials, and the "Chinese Pharmacopoeia" refined the quality requirements for pharmaceutical-grade products. Leading enterprises actively align with international standards such as the European Medicines Agency (EMA) and the U.S. Food and Drug Administration (FDA), breaking through certification barriers. Compliance capacity has become the core of competition, promoting the industry to eliminate non-compliant enterprises and improve concentration.

**(V) Industrial Chain Integration Advantage: Full-chain Layout, Cost Reduction and Efficiency Improvement**

Leading enterprises have realized the integrated layout of "planting-processing-R&D-sales". The upstream controls high-quality raw materials to avoid price fluctuations, the midstream achieves large-scale production to reduce costs and improve quality, and the downstream connects directly to the terminal to improve response efficiency. Leading enterprises such as Jilin Aodong and Tongrentang Technology have built a full industrial chain system. The CR5 concentration of the industry has increased from 23% in 2021 to 31% in 2025, and the full-chain integration capacity has become the core competitiveness.

## II. Future Market Development Outlook of Ginseng Extracts

Driven by multiple factors such as policy, technology, consumption and internationalization, the ginseng extract market will show a trend of "scaling, high-value, diversification and standardization", and at the same time face multiple challenges, with broad overall prospects. The specific outlook is carried out from

four aspects.

### (I) Market Scale: Steady Expansion Driven by Demand

In terms of the domestic market, the market scale increased from 2.8 billion yuan to 4.5 billion yuan from 2021 to 2025, with a compound annual growth rate of 12.6%. It is expected to maintain an average annual growth rate of 10.8% from 2026 to 2030, exceeding 7.5 billion yuan by 2030. In the global market, the scale reached 32.2 million US dollars in 2023, and the average annual growth rate is expected to be 6.15% by 2028, with China continuing to occupy a dominant position. The core drivers are: 217 million elderly people (2023) driving demand related to chronic diseases; the awakening of health awareness among Generation Z, with online sales increasing by 40% annually; the cosmetics field leading in growth rate, with the application proportion expected to reach 28% by 2030; the export volume in 2024 reached 1,850 tons, a year-on-year increase of 12.3%, and the export potential is continuously released.

### (II) Development Trends: Four Directions Leading High-quality Development

#### 1. Product Structure: Upgrade towards High-value and Refinement

The demand for high-purity extracts (total saponins $\geqslant$ 60%) is rising. In 2024, the production capacity of Rg3 monomer exceeded 15 tons, nearly 3 times that of 2020; customized products have become a hot spot, adapting to the differentiated needs of various downstream fields. Synthetic biology technology promotes the commercialization of biosynthetic extracts, solving the problems of complex components and difficult purity control of natural extracts, and becoming a new growth point.

#### 2. Application Fields: Diversification and Scenario-based Extension

In addition to traditional fields, the demand in fields such as functional beverages (a year-on-year increase of 25% in 2023), special medical food, pet health care, and beauty medical aesthetics is gradually being released. Scenario-based marketing accurately targets office workers, the elderly, women and other groups, improving market penetration.

#### 3. Industry Pattern: Development towards Concentration and Branding

Stricter supervision and intensified competition have promoted the industry to eliminate small and medium-sized enterprises. It is expected that the CR5 concentration will increase to more than 45% by 2030. Enterprises strengthen the brand label of "authentic raw materials + full traceability", and domestic leading enterprises gradually break the high-end monopoly of international enterprises and expand the global market.

#### 4. Technological Innovation: Transformation towards Greenization and Intelligence

Promote green technologies such as supercritical $CO_2$ extraction to meet the "dual carbon" goal; introduce AI and the Internet of Things to realize intelligent production and improve product stability; promote technology transformation through industry-university-research collaboration, deepen the research on efficacy mechanisms, and strengthen product scientificity.

### (III) Core Driving Factors: Four-dimensional Synergistic Efforts

#### 1. Policy Drive: Escort by Traditional Chinese Medicine and Big Health Policies

Policies such as the "14th Five-Year Plan for the Development of Traditional Chinese Medicine" and "Healthy China 2030" support the development of authentic medicinal materials and the plant extract industry. Local major producing areas have issued special policies to build industrial clusters, promoting the standardized and internationalized development of the industry.

#### 2. Technology Drive: Breaking Bottlenecks in Processes and R&D

Modern extraction processes improve product quality and added value, cutting-edge technologies break through industry pain points, new technologies such as synthetic biology open up new production paths, and in-depth efficacy research expands application scenarios.

#### 3. Consumption Drive: Health Upgrade and Diversified Demand

The concept of "prevention is better than cure" is deeply rooted in the hearts of the people, and the demand for natural and healthy products is growing; the diversification of consumer groups promotes the upgrading of products towards convenience, youthfulness and high-end, and the national trend of health preservation improves brand recognition.

#### 4. Internationalization Drive: Continuous Release of Export Potential

The global demand for natural plant extracts is growing. China's products have significant cost-performance advantages. In 2023, the export volume reached 2 billion US dollars, mainly sold to South Korea, Southeast Asia and other regions. The "Belt and Road" initiative promotes the expansion of emerging markets, and breakthroughs in international certification help export growth.

### (IV) Potential Challenges: Multiple Restrictions Need Active Response

First, raw material risks: the 4-6 year planting cycle of ginseng leads to fluctuations in output, quality and price; second, homogeneous competition: the chaos in the mid-to-low-end market compresses enterprise profits; third, international barriers: strict import standards increase export costs; fourth, insufficient R&D: some enterprises are difficult to meet high-value demand; fifth, imperfect standards: there is still room for improvement in the standardization of segmented fields.

## III. Conclusion

As a core product integrating traditional Chinese medicine modernization and the big health industry, ginseng extract has sustained demand growth relying on its five core advantages. In the future, the market will continue to expand, with the domestic scale expected to exceed 7.5 billion yuan by 2030, showing four major development trends. The industry needs to respond to multiple challenges. Enterprises should focus on technological innovation and differentiated layout, and the industry should strengthen industry-university-research collaboration and standard improvement to promote high-quality development and help the internationalization of traditional Chinese medicine and the upgrading of the big health industry.