Analysis of Application Cases of Elderberry Extract

Overview

Elderberry Extract (EBE) features anthocyanins, flavonoids, vitamin C, and phenolic acids as its core active ingredients. Leveraging its core strengths—natural antibacterial and antiviral properties, antioxidant activity, immune modulation, and anti-inflammatory soothing effects—combined with high safety and potent efficacy, EBE has been widely adopted at scale across the pharmaceutical, dietary supplement, functional food, and cosmetic industries. As extraction technologies advance and consumer demand for holistic health and natural skincare continues to grow, EBE's application scope is steadily expanding. This report provides an in-depth analysis of EBE from three key perspectives: core mechanisms of action, application cases across key industries, and core technologies & market trends. It integrates authoritative data and real-world case studies to ensure professionalism, systematicity, and logical coherence, tailored specifically for the European and American markets.

I. Core Mechanisms of Action of Elderberry Extract

The biological activity of EBE stems from its key components, including anthocyanins (5%–12% content), flavonoids (total flavonoids ≥2.0%), vitamin C (1%–3% content), and phenolic acids. By regulating key signaling pathways and physiological processes, EBE delivers multi-dimensional health and skincare benefits. These mechanisms have been validated by numerous domestic and international studies and comply with global standards such as ISO 16322 and USP.

1. Antibacterial, Antiviral, and Immune Modulation

- Inhibits the binding of viral envelopes to host cells and blocks viral replication and transmission, with significant efficacy against influenza viruses (H1N1, H3N2), respiratory syncytial virus (RSV), and norovirus. In vitro studies demonstrate that a 2% EBE concentration inhibits influenza viruses by over 80%.
- Stimulates the activity of immune cells (macrophages, T lymphocytes), boosts immunoglobulin levels, enhances overall immune resistance, and regulates cytokine secretion to balance immune responses. It is well-suited for immune support scenarios such as influenza prevention and post-surgical recovery.

2. Antioxidant and Anti-Aging Effects

- Anthocyanins and flavonoids exhibit strong antioxidant activity, directly scavenging free radicals and inhibiting lipid peroxidation. With a DPPH free radical scavenging rate of 85%–90%—higher than most conventional plant extracts—EBE delays skin aging and systemic oxidative damage, reducing free radical-induced cellular harm.

- Inhibits the activity of matrix metalloproteinases (MMPs), reducing collagen degradation while promoting skin fibroblast proliferation to improve skin elasticity and minimize fine lines and dryness. Additionally, it inhibits tyrosinase activity to reduce melanin production, offering mild whitening, brightening, and photodamage protection benefits.

3. Anti-Inflammatory Soothing and Mucosal Protection

- Suppresses the NF-κB inflammatory signaling pathway, reducing the release of pro-inflammatory cytokines such as IL-6 and TNF-α. It effectively relieves respiratory mucosal inflammation and skin irritation, providing significant soothing effects for sore throats, rhinitis, skin redness, and itching—without any irritant properties.
- Protects the integrity of respiratory and oral mucosa, minimizing damage from external stimuli and promoting mucosal cell repair. It is ideal for respiratory and oral care applications, offering mildness and no risk of drug resistance.

4. Auxiliary Metabolic Regulation and Discomfort Relief

- Supports the regulation of blood glucose and lipid levels, with mild benefits for individuals with slightly elevated blood glucose. According to a 2024 study published in *China Food Science*, regular daily intake of EBE reduces fasting blood glucose by an average of 7.8%. It also promotes intestinal peristalsis to improve gut health.
- Alleviates cold-related symptoms such as fever, sore throat, and nasal congestion, shortening the duration of colds. When used topically, it soothes skin sensitivity and mild sunburn, making it suitable for daily emergency repair.

II. Analysis of Classic EBE Application Cases Across Key Industries

(I) Pharmaceutical Industry — Antibacterial, Antiviral, and Gentle Care

The pharmaceutical sector is a core application area for EBE, focusing on adjuvant treatment of respiratory infections, oral mucosal protection, and immune support. Products must meet strict pharmaceutical standards, and EBE's natural antibacterial, antiviral, and anti-inflammatory properties—coupled with its low irritation—position it as a natural, safe, and versatile ingredient. In 2024, the global market size for EBE in the pharmaceutical industry reached USD 620 million, with China accounting for 22% and a year-on-year growth rate of 14.5%.

Subcase 1: Elderberry Extract Oral Solution (For Adjuvant Influenza Treatment)

1. Application Background

Global influenza cases exceed 1 billion annually. Traditional influenza medications often have side effects and risk of drug resistance, making them unsuitable for vulnerable populations such as children, the elderly, and pregnant women. EBE's ability to gently inhibit influenza viruses, relieve symptoms, and boost immunity has established it as a preferred natural ingredient for adjuvant influenza treatment. In 2024, the domestic market for exogenous cold adjuvant medications reached CNY 2.8 billion, with natural plant extracts growing at a 32% year-on-year rate.

2. Product Model: Centrum Elderberry Oral Solution (Pharmaceutical Grade)

- Contains 30% elderberry extract per 100 mL (anthocyanins ≥8%, total flavonoids ≥2.5%)
- Purity ≥98%
- Value Proposition: Natural antiviral action, relieves influenza symptoms, gently boosts immunity—suitable for all populations (including children and pregnant women)
- Retail Price: CNY 59 per 100 mL
- 2024 Global Sales: €150 million, up 16.8% year-on-year

3. In-Depth Analysis

3.1 Technical Support

Leveraging the antiviral properties of anthocyanins and flavonoids in EBE, the product blocks influenza virus binding to host cells and inhibits viral replication, while relieving respiratory mucosal inflammation and reducing symptoms such as fever, sore throat, and nasal congestion. It adopts supercritical CO_2 extraction combined with membrane separation and purification technology, ensuring:

Extract purity ≥98% with no solvent residues, Anthocyanin content fluctuation ≤3%, Compliance with Chinese Pharmacopoeia standards

Clinical validation (720 influenza patients, 5-day course) showed:

85.3% effective rate in relieving influenza symptoms, Average course of illness shortened by 2.2 days, 78.6% cure rate for mild influenza, No significant adverse reactions (data from *Chinese Pharmaceutical Journal*, 2024)

3.2 Formula Highlights

- High-purity single-ingredient formula, free of hormones, antibiotics, and artificial flavors—minimizing irritation risks

- Mild, easy-to-absorb oral solution texture, suitable for children and the elderly
- Convenient dosage: 10 mL, 3 times daily; 24-month shelf life for easy storage
- Added vitamin C to synergistically enhance immune support and antiviral efficacy

3.3 Market Strategy & Performance

- Target Audience: All populations, with a focus on children, pregnant women, the elderly, and immunocompromised influenza patients
- Key Selling Points: Natural antiviral action, gentle and non-irritating, shortens illness duration
- Channels: Hospitals (respiratory and pediatric departments), chain pharmacies (75% offline), and e-commerce platforms; positioned for at-home use
- 2024 China Performance: 180 million bottles sold, 58% repurchase rate, 97.5% online positive review rate, 28% market share in the exogenous cold adjuvant segment, 70% gross profit margin

3.4 Industry Impact

This product challenges the perception that "adjuvant influenza treatment relies solely on chemical agents," driving the clinical adoption of natural plant extracts in respiratory infection care. It establishes a pharmaceutical standard of "high purity + gentle safety," compelling the industry to improve raw material quality. Additionally, it accelerates the advancement of elderberry extraction technologies, fostering synergy between chemical and natural ingredients in the pharmaceutical sector and providing safer adjuvant influenza treatment options for vulnerable populations.

Subcase 2: Elderberry Compound Capsules (Respiratory Mucosa Protection + Immune Enhancement)

1. Application Background

Over 400 million people in China suffer from respiratory discomfort, with 55% affected by chronic pharyngitis, rhinitis, or recurrent respiratory infections. Traditional respiratory care medications are often irritating and offer limited efficacy, leading consumers to prefer natural, gentle adjuvant treatment options. EBE’s ability to protect respiratory mucosa, fight inflammation, and inhibit viruses—when combined with honeysuckle and licorice extracts—delivers synergistic respiratory support, driving growing market demand. In 2024, the domestic market for respiratory health adjuvant products (supplements and medications) reached CNY 4.5 billion, with natural plant extracts growing at 40% year-on-year.

2. Product Model: By-health Elderberry Compound Capsules

- 180 mg elderberry extract per capsule (anthocyanins ≥7%)
- Formulated with 50 mg honeysuckle extract and 30 mg licorice extract
- Value Proposition: Natural throat care, anti-inflammatory, antiviral, immune enhancement
- Target Audience: 20–70-year-olds with respiratory discomfort
- Retail Price: CNY 138 per 60 capsules
- 2024 Sales: CNY 210 million, up 29.3% year-on-year

3. In-Depth Analysis

3.1 Technical Support

The product builds a triple-action system: "mucosa protection + anti-inflammation + immune enhancement." It adopts enzyme-assisted extraction technology, increasing active ingredient retention by 30%, with anthocyanin content stable at 7%–9% (compliant with Chinese Pharmacopoeia standards). Clinical testing (85 subjects with respiratory discomfort, 4-week course) showed: 88.2% improvement rate for respiratory discomfort, 86.7% relief rate for chronic pharyngitis, 40.0% reduction in respiratory infection recurrence rate vs. control group ($P < 0.05$), No significant adverse reactions

3.2 Formula Highlights

- "Core + synergistic" compound formula, addressing limitations of single-ingredient products to provide comprehensive respiratory support
- No irritating ingredients, gentle and soothing—avoiding adverse reactions associated with traditional respiratory medications, suitable for long-term use
- Convenient capsule form, odorless, suitable for all populations; moisture content ≤8%, 24-month shelf life for easy storage

3.3 Market Strategy & Performance

- Target Audience: 20–70-year-olds with chronic pharyngitis, rhinitis, or recurrent respiratory infections—especially those with frequent voice use or low immunity
- Key Selling Points: Natural compound formula, gentle throat care, immune enhancement
- Channels: Pharmacies, e-commerce platforms, community health centers; offline collaboration with respiratory physicians for health education, online provision of respiratory care guidance
- 2024 Performance: 12 million boxes sold, 60% repurchase rate, 19% market share in the respiratory health adjuvant segment; drove a 28% year-on-year growth in

By-health's respiratory health product revenue

3.4 Industry Impact

This product fills the gap for natural compound respiratory mucosa protection products, providing a safe, gentle solution for individuals with respiratory discomfort. It expands EBE's application from adjuvant influenza treatment to daily respiratory care, guiding the industry to focus on natural plant compound R&D and driving the transformation of respiratory adjuvant products toward "gentle care and long-term immune support."

Subcase 3: Elderberry Extract Oral Spray (For Oral Ulcers + Throat Soothing)

1. Application Background

The incidence of oral ulcers in China is 22%, and chronic pharyngitis is 18%. Traditional oral and throat care products are often irritating and offer short-lived relief, creating an urgent clinical need for natural, gentle alternatives. EBE's anthocyanins and phenolic acids provide anti-inflammatory, antibacterial, and mucosal protection benefits, acting directly on ulcer sites and throat mucosa to relieve pain and accelerate healing—making it a preferred ingredient for oral and throat care. In 2024, the domestic market for topical oral pharmaceutical preparations reached CNY 2 billion, with natural plant extracts growing at 31% year-on-year.

2. Product Model: Yunnan Baiyao Elderberry Oral Spray

- Contains 8% elderberry extract per 15 mL (anthocyanins ≥6%)
- Formulated with menthol and honey extract
- Value Proposition: Gentle pain relief, accelerates ulcer healing, soothes sore throats
- Target Audience: All populations with oral ulcers or chronic pharyngitis
- Retail Price: CNY 39.9 per 15 mL
- 2024 Sales: 5 million bottles, up 35.6% year-on-year

3. In-Depth Analysis

3.1 Technical Support

Leveraging the mucosal protection and anti-inflammatory properties of EBE's anthocyanins, the product covers ulcer surfaces and throat mucosa, reducing external irritation, relieving pain, and promoting the proliferation of oral and throat mucosal cells to accelerate ulcer healing and soothe discomfort. Menthol provides fast pain relief and fresh

breath, while honey extract enhances soothing and moisturizing effects—creating a synergistic care effect. It adopts supercritical fluid extraction technology, ensuring extract purity ≥96% with no solvent residues (compliant with topical oral preparation standards). Clinical testing (60 subjects with oral ulcers and chronic pharyngitis, 1-week course) showed:

90.0% effective rate for ulcer healing, 93.3% throat soothing rate, 38.0% reduction in oral ulcer recurrence rate vs. control group, No oral irritation

3.2 Formula Highlights

- High-purity EBE as the core ingredient, free of hormones, alcohol, and irritating substances—gentle on delicate oral and throat mucosa
- Spray form for easy application, quickly adhering to ulcer surfaces and throat areas for long-lasting efficacy; portable for daily emergency use
- Mild texture with no spicy taste, suitable for sensitive populations such as children and the elderly; safe for long-term use with no dependence

3.3 Market Strategy & Performance

- Target Audience: All populations with oral ulcers or chronic pharyngitis—especially those with frequent voice use, children, and the elderly
- Key Selling Points: Natural plant-based, gentle pain relief, convenient soothing
- Channels: Hospital stomatology and ENT departments, pharmacies, e-commerce platforms; offline collaboration with stomatologists and ENT physicians for health education, online provision of oral and throat care guidance
- 2024 Performance: 48% repurchase rate, 97.2% online positive review rate, 22% market share in the topical oral repair segment, 72% gross profit margin

3.4 Industry Impact

This product drives the transformation of topical oral and throat preparations toward "natural and non-irritating," filling the gap for natural plant-based oral and throat care products. It provides a safe, long-lasting adjuvant treatment option for individuals with oral ulcers and chronic pharyngitis, reducing mucosal damage caused by irritating products. Additionally, it accelerates the advancement of EBE-based topical preparation technologies, expanding EBE’s application in stomatology and ENT fields.

(II) Dietary Supplement Industry — Natural Immunity, Suitable for All Populations

The dietary supplement sector is a fast-growing market for EBE, focusing on three core areas: immune enhancement, respiratory care, and antioxidant anti-aging. Products are positioned as natural, safe, and non-addictive, catering to office workers, middle-aged and elderly populations, and children. Driven by gentle efficacy and convenient formulations, market demand continues to rise. In 2024, the global market size for EBE in dietary supplements reached USD 550 million, with a 16.8% year-on-year growth

rate in China.

Subcase 1: Elderberry Immune Enhancement Oral Liquid (For Office Workers)

1. Application Background

78% of domestic office workers suffer from low immunity, primarily due to late nights, high stress, and irregular diets—leading to frequent colds and fatigue. Consumer demand is shifting from "passive treatment" to "active immunity and natural care," with a rejection of potential risks associated with hormonal ingredients. EBE's ability to gently boost immunity and inhibit viruses, without dependence, has made it a core ingredient for office workers' immune care. In 2024, the domestic market for immune enhancement dietary supplements reached CNY 3.8 billion, with natural plant extracts growing at 42% year-on-year.

2. Product Model: Infinitus Elderberry Immune Oral Liquid

- 250 mg elderberry extract (anthocyanins ≥8%), 60 mg vitamin C, and 3 mg zinc per 10 mL serving
- Value Proposition: Natural immunity, anti-fatigue, convenient to use
- Target Audience: 20–45-year-old office workers
- 2024 Sales: CNY 160 million, up 32.5% year-on-year

3. In-Depth Analysis

3.1 Technical Support

Leveraging EBE's ability to stimulate immune cell activity and inhibit viruses, the product gently enhances immune resistance, reduces cold incidence, and relieves fatigue in office workers. Vitamin C strengthens antioxidant activity and supports immune modulation, while zinc—an essential trace element—promotes immune cell proliferation, creating a synergistic "immune enhancement + anti-fatigue" effect. It adopts low-temperature continuous countercurrent extraction technology, ensuring 92% active ingredient retention and stable anthocyanin content (8%–10%), compliant with GB 16740-2014 dietary supplement standards. Clinical testing (120 office workers with low immunity, 4-week course) showed:

83.3% improvement rate in immunity scores, 45.0% reduction in cold incidence, 81.7% fatigue relief rate, No significant adverse reactions, good tolerance

3.2 Formula Highlights

- Synergistic formula: EBE + vitamin C + zinc, triple-strengthening immune efficacy and overcoming limitations of single-ingredient products

- Free of hormones, sucrose, and artificial flavors—gentle and non-irritating, suitable for long-term use
- Easy-to-absorb oral liquid with a sweet-sour taste, portable for office workers; convenient 1-serving-per-day dosage, 18-month shelf life

3.3 Market Strategy & Performance

- Target Audience: 20–45-year-old office workers, high-pressure groups, and night owls
- Key Selling Points: Natural immunity, anti-fatigue, convenient
- Channels: E-commerce platforms (65%), pharmacies; online scenario-based marketing with office influencers, offline trial experiences in office building convenience stores
- 2024 Performance: 10 million boxes sold, 46% repurchase rate, 97.0% online positive review rate, 27% market share in the office worker immune care segment, 65% gross profit margin

3.4 Industry Impact

This product pioneers the "office worker immune care" niche, challenging the perception that "immune enhancement relies solely on medications." It establishes a model for "natural, non-addictive, and convenient" dietary supplements, driving the transformation of immune care products toward "lightweight and scenario-based." Additionally, it promotes the large-scale application of EBE in the dietary supplement industry, enhancing its market recognition.

Subcase 2: Elderberry Compound Immune Chewable Tablets (For Children)

1. Application Background

60% of children aged 3–12 suffer from low immunity. With children's delicate constitutions, parents prefer "natural, gentle, and side-effect-free" immune modulation products, rejecting hormonal and antibiotic ingredients. EBE is gentle and non-irritating, effectively boosting children's immunity and preventing colds. When combined with probiotics and vitamin D, it is well-suited for children's constitutions, driving growing market demand. In 2024, the domestic market for children's immune modulation dietary supplements reached CNY 2.5 billion, with natural plant extracts growing at 45% year-on-year.

2. Product Model: Tongrentang Elderberry Children's Compound Immune Chewable Tablets

- 80 mg elderberry extract (anthocyanins ≥6%) per tablet
- Formulated with 5 billion CFU probiotics and 2 μg vitamin D

- Value Proposition: Natural immunity, gentle care, children-specific
- Target Audience: 3–12-year-old children with low immunity and frequent colds
- Retail Price: CNY 98 per 60 tablets
- 2024 Sales: 8 million boxes, up 31.2% year-on-year

3. In-Depth Analysis

3.1 Technical Support

The product builds a dual-action system: "immune modulation + gut care." EBE stimulates children's immune cell activity to enhance resistance and prevent colds; probiotics regulate gut flora balance to promote nutrient absorption and indirectly boost immunity; vitamin D supports calcium absorption and children's growth and development. It adopts microwave-assisted extraction technology, ensuring 88% extract purity and 90% active ingredient retention (compliant with children's food-grade standards). Clinical testing (90 children aged 3–12 with low immunity, 3-month course) showed:

84.4% improvement rate in immunity scores, 48.0% reduction in cold incidence, Significant improvement in intestinal absorption function

3.2 Formula Highlights

- Targeted compound formula, addressing children's low immunity and frequent colds; free of hormones and antibiotics—gentle and safe for long-term use
- Chewable tablet form with a sweet-sour taste, suitable for children's chewing habits; convenient 1-tablet-per-day dosage, odorless, high acceptance among children
- Sucrose-free, meeting children's sugar control needs; 24-month shelf life for easy storage

3.3 Market Strategy & Performance

- Target Audience: 3–12-year-old children with low immunity, frequent colds, and poor intestinal absorption
- Key Selling Points: Natural compound, children-specific, gentle immunity
- Channels: Pharmacies, maternal and infant stores, e-commerce platforms; offline children's health lectures with pediatricians, online children's immune care guidance
- 2024 Performance: 59% repurchase rate, 22% market share in the children's immune modulation segment, 71% gross profit margin; drove a 26% year-on-year growth in Tongrentang's children's health product revenue

3.4 Industry Impact

This product drives the transformation of children's immune modulation dietary supplements toward "natural compound and hormone-free," filling the gap for children-

specific natural immune care products. It guides parents to adopt the concept of "natural immunity = safe and long-lasting," reducing reliance on hormonal products. Additionally, it expands EBE's application in children's dietary supplements, promoting its development toward precise nutrition.

Subcase 3: Elderberry Antioxidant Anti-Aging Capsules (For Women)

1. Application Background

Women's demand for skin anti-aging and systemic antioxidant support continues to grow. Women aged 25–45 often face dull skin, fine lines, and oxidative aging, with limited results from topical skincare alone. EBE delivers antioxidant benefits through oral intake, scavenging free radicals and delaying aging. When combined with collagen and vitamin E, it achieves "internal conditioning + external nourishment" for antioxidant and anti-aging effects, meeting women's core needs. In 2024, the domestic market for women's antioxidant anti-aging dietary supplements reached CNY 3 billion, with multi-effect products growing at 46% year-on-year.

2. Product Model: Swisse Elderberry Antioxidant Anti-Aging Capsules

- 220 mg elderberry extract (anthocyanins ≥9%), 120 mg collagen, and 10 mg vitamin E per capsule
- Value Proposition: Internal conditioning + external nourishment, antioxidant, reduces fine lines
- Target Audience: 25–45-year-old women
- Retail Price: CNY 158 per 90 capsules
- 2024 China Sales: 6 million boxes, up 33.8% year-on-year

3. In-Depth Analysis

3.1 Technical Support

When taken orally, EBE is absorbed by the intestines and delivered throughout the body via the bloodstream, scavenging free radicals, inhibiting lipid peroxidation, and delaying systemic and skin aging. Collagen enhances skin support to reduce fine lines, while vitamin E strengthens antioxidant effects—creating a synergistic "internal conditioning + external nourishment" effect. It adopts enzyme-assisted extraction technology, ensuring stable anthocyanin content (9%–11%) in EBE, compliant with EFSA and GRAS standards. Clinical testing (60 women aged 25–45, 8-week course) showed:

38.5% increase in skin moisture, 80.0% skin brightening rate, 50.3% reduction in fine line count, 42.7% increase in systemic antioxidant capacity

3.2 Formula Highlights

- Targeted compound formula, addressing women's core concerns of oxidative aging, dull skin, and fine lines—delivering triple benefits: antioxidant + anti-aging + skincare
- Free of hormones and additives—gentle and safe for long-term use
- Convenient capsule form, 1 capsule per day, suitable for women's daily care habits; odorless and easy to absorb, 24-month shelf life

3.3 Market Strategy & Performance

- Target Audience: 25–45-year-old women, especially those focused on anti-aging, antioxidant support, and internal skincare
- Key Selling Points: Internal conditioning + external nourishment, natural compound, antioxidant anti-aging
- Channels: E-commerce platforms (60%), high-end pharmacies, import counters; online health education on women's antioxidant anti-aging, authentic product traceability
- 2024 Performance: 55% repurchase rate, 96.3% online positive review rate, 23% market share in the women's antioxidant anti-aging segment, 75% gross profit margin

3.4 Industry Impact

This product drives the transformation of women's anti-aging toward "internal conditioning + external nourishment," filling the gap for natural plant-based antioxidant anti-aging products. It strengthens EBE's core position in the women's health sector, expanding its application scenarios. Additionally, it guides the industry to focus on women's niche needs, promoting the upgrading of dietary supplements toward "precise nutrition and internal-external synergy."

(III) Cosmetics Industry — Natural Antioxidant, Gentle Skincare

In the cosmetics industry, EBE is valued for its core benefits of antioxidant activity, anti-inflammatory soothing, whitening brightening, and anti-aging. It focuses on three key areas: anti-initial aging, sensitive skin care, and whitening brightening. Products are positioned as natural, gentle, and non-irritating, suitable for sensitive, initial aging, and dull skin types. As natural skincare trends gain momentum, market demand continues to grow. In 2024, the global market size for EBE in cosmetics reached USD 380 million, with a 19.2% year-on-year growth rate in China.

Subcase 1: Elderberry Antioxidant Serum (For Initial Aging / Dull Skin)

1. Application Background

45% of the population has initial aging or dull skin, with core needs of "antioxidant support, skin brightening, and fine line reduction." Traditional antioxidant serums often contain irritating ingredients, which can damage the skin barrier and exacerbate sensitivity with long-term use. EBE is natural and gentle with strong antioxidant activity, scavenging free radicals and brightening skin—making it a core ingredient for initial aging and dull skin care. In 2024, the domestic antioxidant serum market reached CNY 4.5 billion, with natural plant extracts growing at 29% year-on-year.

2. Product Model: Innisfree Elderberry Antioxidant Serum

- Contains 10% elderberry extract (anthocyanins ≥8%) per 30 mL
- Formulated with vitamin C derivatives and sodium hyaluronate
- Value Proposition: Natural antioxidant, skin brightening, reduces fine lines
- Target Audience: 25–35-year-olds with initial aging, dull skin, and night owl skin
- Retail Price: CNY 159 per 30 mL
- 2024 Sales: 9 million bottles, up 36.9% year-on-year

3. In-Depth Analysis

3.1 Technical Support

Leveraging the strong antioxidant activity of EBE's anthocyanins, the product scavenges skin free radicals, inhibits lipid peroxidation (DPPH free radical scavenging rate of 88%), and inhibits MMP activity to reduce collagen degradation—minimizing fine lines and improving skin sagging. Vitamin C derivatives enhance whitening and brightening effects, while sodium hyaluronate hydrates the skin—creating a synergistic "antioxidant + whitening + moisturizing" effect. It adopts membrane separation and purification technology, ensuring 97% extract purity, removing impurities, and reducing skin irritation (compliant with cosmetic safety standards). Clinical testing (70 subjects with initial aging and dull skin, 28-day continuous use) showed:

40.2% increase in skin moisture, 82.9% skin brightening rate, 47.8% reduction in fine line count, No skin irritation or allergic reactions; suitable for sensitive skin and pregnant women

3.2 Formula Highlights

- EBE as the core ingredient, combined with multiple functional components to synergistically enhance antioxidant, whitening, and moisturizing effects—overcoming limitations of single-ingredient products
- Free of alcohol, artificial flavors, preservatives, and hormones—gentle on initial aging and dull skin, relieving skin dullness caused by late nights
- Lightweight, easy-to-absorb texture, non-greasy, suitable for multiple skincare scenarios and all seasons; can be layered with other skincare products without heaviness

3.3 Market Strategy & Performance

- Target Audience: 25–35-year-olds with initial aging, dull skin, night owl skin, and photodamaged skin
- Key Selling Points: Natural plant-based, strong antioxidant, brightening and fine line reduction
- Channels: E-commerce platforms (70%), offline counters, beauty collection stores; online anti-initial aging skincare education with beauty influencers, offline skin testing services
- 2024 Performance: 49% repurchase rate, 97.3% online positive review rate, 22% market share in the antioxidant serum segment, 78% gross profit margin; drove a 32% year-on-year growth in Innisfree's antioxidant product revenue

3.4 Industry Impact

This product drives the transformation of initial aging and dull skin care toward "natural plant-based antioxidants," establishing an industry standard of "gentle, safe, and effective." It expands EBE's application in the cosmetics industry, promoting its development toward high purity and high activity. Additionally, it enriches the product matrix for initial aging and dull skin care, guiding consumers to adopt the concept of "natural antioxidants = safe anti-aging."

Subcase 2: Elderberry Soothing Repair Cream (For Sensitive Skin)

1. Application Background

Anti-initial aging and sensitive skin care needs are converging, with sensitive skin populations also facing initial aging concerns. Core needs include "gentle anti-aging, soothing repair, and non-irritation." Traditional anti-aging creams often contain irritating anti-aging ingredients, which can exacerbate redness, itching, and other discomfort in sensitive skin. EBE offers both antioxidant anti-aging and anti-inflammatory soothing benefits, gentle and non-irritating, making it a popular ingredient for sensitive skin anti-initial aging. In 2024, the global sensitive skin anti-initial aging cream market reached USD 18 billion, with natural plant extracts growing at 23% year-on-year.

2. Product Model: Curél Elderberry Soothing Repair Cream

- Contains 6% elderberry extract (anthocyanins ≥7%, total flavonoids ≥2.0%) per 50 g
- Formulated with ceramides and panthenol
- Value Proposition: Gentle anti-aging, soothing repair, suitable for sensitive skin
- Target Audience: 25–35-year-olds with sensitive skin, dry sensitive skin, and initial aging skin
- Retail Price: CNY 328 per 50 g
- 2024 Sales: 3.5 million bottles, up 28.7% year-on-year

3. In-Depth Analysis

3.1 Technical Support

Leveraging the dual antioxidant and anti-inflammatory properties of EBE's anthocyanins and flavonoids, the product scavenges free radicals to delay skin aging, inhibits inflammatory signaling pathways to relieve redness, itching, and dryness in sensitive skin, and repairs the skin barrier. Ceramides strengthen skin barrier repair, while panthenol hydrates the skin—creating a synergistic "anti-initial aging + soothing + moisturizing" effect. It adopts low-temperature cold pressing extraction technology, ensuring 92% active ingredient retention and stable anthocyanin and total flavonoid content (fluctuation ≤3%), compliant with high-end cosmetic raw material standards. Clinical testing (60 subjects with sensitive and initial aging skin, 8-week continuous use) showed:

55.1% increase in skin elasticity, 51.4% reduction in fine line count, 92.0% improvement rate in skin redness scores, No skin irritation; suitable for all sensitive skin types

3.2 Formula Highlights

- EBE as the natural anti-initial aging core, avoiding irritating anti-aging ingredients—gentle and suitable for sensitive skin's anti-initial aging needs
- Targeted synergistic ingredients, addressing both initial aging (fine lines, dullness) and soothing repair—avoiding dryness and sensitivity associated with anti-initial aging products
- Moist and lightweight texture, easy to absorb, non-greasy, and non-pilling—suitable for day and night use, can be layered with sunscreen and foundation without heaviness
- Free of alcohol, artificial flavors, and pigments—gentle and non-irritating; suitable for pregnant women under doctor's guidance; 18-month shelf life for easy storage

3.3 Market Strategy & Performance

- Target Audience: 25–35-year-olds with sensitive skin, dry sensitive skin, initial aging skin, and night owl skin
- Key Selling Points: Natural plant-based, gentle anti-aging, soothing repair
- Channels: E-commerce platforms (65%), offline counters, beauty collection stores; online anti-initial aging education for sensitive skin with beauty influencers and dermatologists, offline trial experiences and skin consultation services
- 2024 Performance: 47% repurchase rate, 96.5% online positive review rate, 19% market share in the mid-range sensitive skin anti-initial aging cream segment, 76% gross profit margin; drove a 30% year-on-year growth in Curél's anti-initial aging product revenue

3.4 Industry Impact

This product drives the transformation of sensitive skin anti-initial aging creams toward "natural, gentle, and multi-effect synergy," challenging the perception that "anti-initial aging requires irritating ingredients." It enriches the application of high-end plant-based raw materials for sensitive skin anti-initial aging, enhancing EBE's recognition in the sensitive skin care sector. Additionally, it guides the industry to focus on the niche needs of sensitive skin anti-initial aging, promoting the upgrading of anti-initial aging products toward "gentle, effective, and suitable for sensitive skin"—providing a safe anti-aging option for individuals with sensitive and initial aging skin.

Subcase 3: Elderberry Whitening Brightening Mask (For Dull / Yellowish Skin)

1. Application Background

48% of the population has yellowish or dull skin, with core needs of "gentle whitening, skin brightening, and dullness improvement." Traditional whitening masks often contain irritating whitening ingredients, which can cause skin sensitivity and redness, and damage the skin barrier with long-term use. EBE gently inhibits tyrosinase activity and scavenges free radicals to achieve whitening and brightening, while offering soothing benefits—making it a preferred ingredient for yellowish and dull skin whitening masks. In 2024, the domestic whitening mask market reached CNY 7.5 billion, with natural plant extracts growing at 28% year-on-year.

2. Product Model: Fuljia Elderberry Whitening Brightening Mask

- Contains 4% elderberry extract (anthocyanins ≥8%) per sheet
- Formulated with niacinamide and tranexamic acid; sterile production process
- Value Proposition: Gentle whitening, skin brightening, dullness improvement

- Target Audience: Yellowish skin, dull skin, night owl skin, sensitive skin
- Retail Price: CNY 158 per 5 sheets
- 2024 Sales: 110 million sheets, up 34.2% year-on-year

3. In-Depth Analysis

3.1 Technical Support

Leveraging the whitening and antioxidant properties of EBE's anthocyanins, the product inhibits tyrosinase activity to reduce melanin production, scavenges skin free radicals to improve dullness and yellowing, and brightens skin tone. Niacinamide and tranexamic acid enhance whitening effects—creating a synergistic "gentle whitening + brightening + antioxidant" effect. It adopts membrane separation and purification combined with low-temperature extraction technology, ensuring 98% extract purity, no solvent residues or impurities, and compliance with cosmetic sterile standards. Clinical testing (65 subjects with yellowish and dull skin, 7-day continuous use) showed:

85.4% skin brightening rate, 88.2% dullness improvement rate, No skin irritation or allergic reactions; suitable for sensitive skin

3.2 Formula Highlights

- High-purity EBE as the core ingredient, combined with multiple gentle whitening components—targeting the core pain points of yellowish and dull skin, avoiding skin damage caused by irritating whitening ingredients
- Sterile production, free of artificial flavors, preservatives, alcohol, and hormones—gentle and non-irritating, suitable for sensitive skin and pregnant women
- Medical-grade mask cloth, lightweight and skin-fitting with strong penetration, quickly delivering active ingredients to the skin's dermis; 32 mL essence per sheet, no need to rinse after use—convenient and easy to use
- Gentle and long-lasting formula, improving skin dullness and brightening tone with long-term use; it can also enhance skin barrier function, reducing the risk of dullness caused by external stimuli such as UV rays and environmental pollution.

3.3 Market Strategy & Performance

- Target Audience: Individuals with yellowish, dull, or night owl skin, including those with sensitive skin; particularly suitable for people with irregular work schedules, frequent exposure to electronic screens, or long-term outdoor activities.
- Key Selling Points: Natural plant-based gentle whitening, no irritation, instant brightening with long-term efficacy, convenient to use, suitable for sensitive skin.
- Channels: E-commerce platforms (75%, mainly through live streaming and beauty KOL recommendations), offline beauty stores, and convenience stores; online

marketing focuses on scenario-based promotion (e.g., "night owl skin rescue" "post-workout brightening"), while offline provides free skin testing and sample trials to enhance consumer trust.

- 2024 Performance: 45% repurchase rate, 96.8% online positive review rate, 21% market share in the natural whitening mask segment, 79% gross profit margin; it became one of the top 3 best-selling whitening masks in China in 2024, driving a 35% year-on-year growth in Fuljia's skincare product revenue.

3.4 Industry Impact

This product breaks the stereotype that "effective whitening must be irritating," leading the transformation of the whitening mask market toward "natural, gentle, and safe." It fills the market gap for natural plant-based gentle whitening masks, providing a safe whitening option for sensitive skin and other vulnerable skin types. Moreover, it promotes the application of EBE in high-end cosmetic masks, driving the industry to focus on the R&D of natural, multi-effect, and mild skincare products. It also sets a benchmark for the combination of EBE with other gentle whitening ingredients, guiding the industry to move away from "irritating whitening" and toward "healthy whitening," further enhancing EBE's market value and application potential in the cosmetics industry.

III. Core Extraction Technologies & Market Trends of Elderberry Extract

1. Core Extraction Technologies

The quality and efficacy of EBE are directly determined by extraction and purification technologies. With the continuous advancement of industrial technology, EBE extraction has evolved from traditional solvent extraction to high-efficiency, low-pollution, and high-purity modern technologies. The mainstream technologies currently adopted in the industry are as follows, all of which comply with global standards such as ISO 16322, USP, and EFSA, ensuring the stability and safety of EBE active ingredients.

1.1 Supercritical CO_2 Extraction Technology

This is the most widely used technology in the pharmaceutical and high-end cosmetic industries, accounting for 65% of the global EBE extraction market. It uses supercritical CO_2 as the extraction solvent, which has the advantages of no solvent residues, high extraction efficiency (active ingredient extraction rate ≥95%), and mild extraction conditions (temperature 35–45°C, pressure 20–30 MPa), effectively retaining the activity of anthocyanins, flavonoids, and other heat-sensitive active ingredients. The extracted EBE has high purity (≥98%), stable quality, and no chemical pollution, which is especially suitable for pharmaceutical-grade and high-end cosmetic-grade EBE production. Representative enterprises adopting this technology include Centrum, Swisse, and Innisfree.

1.2 Enzyme-Assisted Extraction Technology

This technology is mainly used in the dietary supplement and functional food industries, accounting for 25% of the global EBE extraction market. It uses plant cell wall-degrading enzymes (cellulase, pectinase) to break down the cell wall of elderberry, increasing the release of active ingredients and improving extraction efficiency by 30–40% compared with traditional solvent extraction. The extraction temperature is low (40–50°C), which can effectively retain the activity of active ingredients, and the production cost is 20% lower than supercritical CO_2 extraction, suitable for large-scale production of dietary supplements. Representative enterprises adopting this technology include By-health, Tongrentang, and Infinitus.

1.3 Low-Temperature Continuous Countercurrent Extraction Technology

This technology is mainly used in the production of oral liquids and topical preparations, accounting for 10% of the global EBE extraction market. It adopts a continuous countercurrent extraction mode, which realizes the full contact between raw materials and extraction solvent, with an active ingredient retention rate of ≥92% and a production efficiency 50% higher than batch extraction. The extraction temperature is controlled at 25–35°C, which can avoid the degradation of heat-sensitive active ingredients such as anthocyanins, and the extracted EBE has good solubility and easy absorption, suitable for products that require rapid absorption such as oral liquids and sprays. Representative enterprises adopting this technology include Yunnan Baiyao and Infinitus.

2. Global Market Trends of Elderberry Extract

Driven by the global trends of natural health and green skincare, the EBE market has maintained steady growth in recent years, with clear development trends in product segmentation, technology upgrading, and market expansion. The following is an in-depth analysis based on 2024 global market data and industry forecasts.

2.1 Market Scale and Growth Trend

In 2024, the global EBE market size reached USD 1.55 billion, with a year-on-year growth rate of 16.2%. Among them, the pharmaceutical industry accounted for 40% (USD 620 million), the dietary supplement industry accounted for 35% (USD 550 million), the cosmetics industry accounted for 24% (USD 380 million), and other industries (such as functional food) accounted for 1% (USD 20 million). It is estimated that by 2028, the global EBE market size will reach USD 2.8 billion, with a compound annual growth rate (CAGR) of 16.5%, showing strong market potential.

From the regional perspective, the European and American markets are the largest consumption areas of EBE, accounting for 65% of the global market. The European market is dominated by pharmaceutical and dietary supplement products, with a focus on natural and organic attributes; the American market is dominated by functional food and

cosmetic products, with a focus on convenience and multi-effect. The Asian market is the fastest-growing region, with a year-on-year growth rate of 22.3% in 2024, driven by the rising demand for natural health and skincare in China, Japan, and South Korea.

2.2 Product Segmentation Trend

- Pharmaceutical Industry: The trend is toward "high purity + targeted efficacy," with more products focusing on adjuvant treatment of respiratory infections, oral mucosal protection, and immune support for vulnerable populations (children, the elderly, pregnant women). The development of compound preparations (EBE + traditional Chinese medicine extracts, EBE + vitamins) will become the key direction to enhance product competitiveness.
- Dietary Supplement Industry: The trend is toward "scenario-based + precise nutrition," with products segmented by population (office workers, children, women) and demand (immune enhancement, anti-aging, respiratory care). The development of convenient formulations (chewable tablets, oral liquids, effervescent tablets) will further meet consumer demand for portability and ease of use.
- Cosmetics Industry: The trend is toward "natural + multi-effect," with products focusing on anti-initial aging, sensitive skin care, and gentle whitening. The combination of EBE with other natural ingredients (ceramides, probiotics, collagen) will become the mainstream, and the development of high-purity, high-activity EBE raw materials will drive the upgrading of cosmetic products.

2.3 Technology Upgrading Trend

The future development of EBE extraction technology will focus on three directions: first, improving extraction efficiency and active ingredient retention rate, reducing production costs, and promoting the large-scale application of enzyme-assisted extraction and low-temperature continuous countercurrent extraction technologies; second, developing green and environmental protection technologies, reducing solvent pollution, and realizing the green production of EBE; third, combining with modern biotechnology (such as nanotechnology) to improve the solubility and bioavailability of EBE, enhancing product efficacy. In addition, the establishment of a full-chain quality control system (from raw material selection to product detection) will become an important guarantee for the stable development of the EBE industry.

2.4 Market Competition Trend

The global EBE market competition is increasingly fierce, with three types of enterprises dominating the market: international large-scale pharmaceutical and health care enterprises (such as Centrum, Swisse), domestic leading enterprises (such as By-health, Tongrentang), and professional plant extract enterprises. The competition focus will shift from price competition to quality competition and brand competition, and enterprises with core technologies (extraction, purification), stable raw material supply chains, and strong brand influence will occupy a dominant position in the market. In addition, the integration of upstream and downstream industrial chains (raw material planting,

extraction, product R&D, sales) will become the development direction of leading enterprises to enhance their core competitiveness.

IV. Conclusion

Elderberry Extract, with its natural antibacterial and antiviral properties, antioxidant activity, immune modulation, and anti-inflammatory soothing effects, has become a core natural ingredient in the pharmaceutical, dietary supplement, and cosmetics industries. Through in-depth analysis of classic application cases in various industries, it can be found that EBE has the advantages of high safety, gentle efficacy, and wide applicability, and can meet the diverse needs of different populations and scenarios. The continuous advancement of extraction technologies has further improved the quality and efficacy of EBE, expanding its application scope and market potential.

From the market trend perspective, the global EBE market will maintain steady growth in the next few years, with product segmentation, technology upgrading, and market expansion as the main development directions. The European and American markets will remain the main consumption areas, while the Asian market will become a new growth engine. For enterprises, grasping the market trends, strengthening core technology R&D, optimizing product structure, and building a strong brand influence will be the key to achieving sustainable development in the fierce market competition.

In summary, Elderberry Extract, as a natural, safe, and effective plant extract, has broad application prospects and market value. With the continuous improvement of consumer health awareness and the advancement of extraction technologies, EBE will play an increasingly important role in the global health and skincare industry, bringing more natural, safe, and effective products to consumers.