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Product Name: Elderberry Extract

INCI Name: Glycerin, Aqua, Sambucus Nigra Fruit Extract, Benzyl Alcohol, Dehydroacetic Acid

CAS: 56-81-5, 7732-18-5, 84603-58-7, 100-51-6, 520-45-6

Botanical Name: Sambucus fructus nigra L.

Chemical Classification: Mixture

Functional Category: Skin conditioning, humectant, emollient

Extraction Method: The extract is obtained through ultrasonic extraction using ultrasound frequencies between 20 and 25 kHz. At these frequencies, ultrasonic waves generate microscopic bubbles in the liquid containing plant material, leading to a phenomenon known as cavitation. Cavitation produces localized conditions of high pressure and temperature in the microenvironment around the collapsing bubbles. This effect mechanically disrupts plant cell walls, releasing intracellular active compounds and significantly increasing the speed and efficiency of extraction. The process is conducted at 25 °C to preserve thermolabile constituents such as flavonoids, vitamins, and essential oils. Compared with conventional maceration, ultrasonic extraction offers shorter processing time, higher yield, and improved utilization of the botanical raw material. The obtained extract is preserved with a combination of benzyl alcohol (0.86%) and dehydroacetic acid (0.14%), a preservative system approved for natural cosmetics and certified by ECOCERT and COSMOS. The extract is water-soluble, allowing for easy integration into aqueous cosmetic formulations. The pH value of the final extract ranges from 4.0 to 6.5, making it suitable for most dermal applications without additional pH adjustment.

Description: The water-glycerin extract of black elderberry fruit (Sambucus nigra) is a natural botanical ingredient highly valued in the cosmetic industry for its bioactive compounds, particularly anthocyanins, flavonoids, and phenolic acids. These compounds impart strong antioxidant activity, protecting the skin against free radicals and oxidative stress, thereby slowing down processes of skin aging and collagen degradation. The extract exhibits mild astringent properties, making it suitable for formulations targeting

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enlarged pores and for products designed for sensitive regions, such as the area around the eyes. Its gentle toning effect refreshes the complexion and promotes a more even skin appearance, while its anti-inflammatory properties enhance its use in formulations for mild acne and irritated skin. Thanks to its balanced hydration and antioxidant profile, black elderberry extract is incorporated into a wide range of formulations from toners, serum gels, and light emulsions to after-sun soothing products and treatments for mature, dehydrated, and sensitive skin. Its water-phase stability allows easy inclusion into formulations without complex adjustments of pH or system structure.

Bioactive Compounds: Black elderberry fruit (Sambucus nigra) is rich in bioactive phytochemicals responsible for its cosmetic and therapeutic effects. The most prominent group are anthocyanins, pigments that give the fruit its dark purple to black color. The dominant compound is cyanidin-3-glucoside, accompanied by derivatives of cyanidin and delphinidin, which provide strong antioxidant and anti-inflammatory effects. Anthocyanins neutralize free radicals, reduce oxidative stress, and thus help maintain epidermal elasticity and freshness while preventing photoaging. Flavonols, including quercetin, kaempferol, and their glycosides, contribute to capillary stabilization, reduced vascular permeability, and mitigation of redness, making them particularly useful in formulations for sensitive and reactive skin. Their pronounced anti-inflammatory activity supports irritation relief and inflammatory process regulation. Phenolic acids such as chlorogenic acid, caffeic acid, and ferulic acid act synergistically with flavonoids, enhancing protection against oxidation and UV-induced damage. Ferulic acid is particularly known for stabilizing other antioxidants and providing photoprotection. Trace amounts of proanthocyanidins (oligomeric and polymeric tannins) further add mild astringent and antibacterial effects, supporting pore refinement and prevention of impurities without drying the skin. Additionally, small amounts of vitamin C (ascorbic acid) are present, enhancing antioxidant protection and strengthening collagen structure in synergy with anthocyanins.

Benefits:

- Hydrates the skin by binding and retaining moisture in the epidermis
- Protects against oxidative stress with anthocyanins and polyphenols.
- Soothes irritations by reducing redness and inflammation (flavonoids).
- Supports skin regeneration by stimulating cell renewal and barrier function.

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- Tones and refreshes the complexion with a mild astringent effect.
- Evens skin tone and texture by visually reducing irregularities.
- Suitable for sensitive skin due to its mild and natural composition.
- Non-comedogenic (does not clog pores), safe for oily and acne-prone skin.
- Can be used in the eye area due to its gentle and non-irritating nature.

Application: The water-glycerin extract of black elderberry fruit is used as an active functional component in various cosmetic formulations, primarily in the aqueous phase of emulsions, gels, serums, and tonics. Due to its hydrosolubility, it is easily incorporated without solvents or emulsifiers, making it suitable for cold-process formulations. In toners and cleansing gels: 1–5%, providing mild astringent, soothing, and hydrating effects. In serums and creams for sensitive or mature skin: 2–10%, depending on desired intensity (lower levels when part of multi-extract complexes; higher levels when used as a primary active). In eye-area products: 1–3%, with a gentle preservative and pH system to ensure safety in this sensitive region. In anti-aging and after-sun soothing products: 5–8%, often combined with hyaluronic acid and panthenol for synergistic effects. The extract should be added at the final stage of formulation, at temperatures below 40 °C, to preserve anthocyanins and other heat-sensitive compounds. Product stability depends on pH: the optimal range is 4.5–6.5. At lower pH, anthocyanins appear bright red, while at higher pH they shift to blue-purple shades, which may affect product aesthetics. The extract blends well with chamomile, witch hazel, green tea, and calendula extracts in natural cosmetics, enhancing synergistic soothing, hydrating, and protective effects. Recommended concentration range: 1–10%. For external use only.

Animal Testing: Not tested on animals

GMO Status: Non-GMO

Vegan: Contains no animal-derived ingredients