

TECHNICAL DATA SHEET

Product Name: Arnica Extract

INCI Name: Glycerin, Aqua, Arnica Montana Flower Extract, Benzyl Alcohol, Dehydroacetic Acid

CAS: 56-81-5, 7732-18-5, 68990-11-4, 100-51-6, 520-45-6

Botanical Name: Arnica montana

Chemical Classification: Mixture

Functional Category: Skin and hair conditioning agent, humectant, emollient

Extraction Method: The extract is obtained via ultrasonic extraction using ultrasound frequencies between 20 and 25 kHz. At these frequencies, ultrasonic waves create microscopic bubbles in the liquid containing plant material, leading to a phenomenon known as cavitation. Cavitation generates localized zones of high pressure and temperature around the collapsing bubbles, mechanically disrupting plant cell walls and releasing intracellular active compounds. This significantly enhances both the speed and efficiency of extraction. The process is conducted at 25 °C to preserve the stability of thermolabile components such as flavonoids, vitamins, and essential oils. Compared to traditional maceration, ultrasonic extraction yields a higher extract quantity in a shorter time and with better raw material utilization. The final extract is preserved with a combination of benzyl alcohol (0.86%) and dehydroacetic acid (0.14%), a system approved for use in natural cosmetics and certified by ECOCERT and COSMOS. It is water-soluble, enabling easy incorporation into a variety of water-based cosmetic formulations. The pH of the finished extract ranges between 4.0 and 6.5, making it suitable for most dermal applications without the need for further pH adjustment.

Description: Arnica montana extract is renowned for its anti-inflammatory, analgesic, and regenerative effects. It is derived from arnica flowers rich in flavonoids, sesquiterpene lactones, and essential oils. Flavonoids act as antioxidants, protecting the skin from free radicals and oxidative stress. Arnica soothes irritation and reduces swelling, supports microcirculation, and aids toxin elimination from tissues, making it useful for sensitive or inflamed skin. Its regenerative properties promote the healing of minor skin damage. Arnica extract is often used in formulations targeting under-eye puffiness and

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dark circles, strengthening capillaries and improving lymphatic drainage. In body care products, it relaxes muscles and alleviates leg heaviness. Due to its potent actives like helenalin, arnica should be used with attention to concentration, especially on sensitive skin. High doses may cause irritation, so products must be tested for skin compatibility to ensure safe use even in individuals with sensitive skin. The extract is light yellow, odorless, and water-soluble. pH: 4–6.5.

Bioactive Compounds: Arnica montana extract contains a broad spectrum of phytochemicals that provide strong anti-inflammatory, analgesic, antimicrobial, and regenerative effects. The most important group of compounds are sesquiterpene lactones, particularly helenalin, along with its derivatives such as helenalin acetate and dihydro-helenalin. These compounds are key anti-inflammatory agents, as they inhibit activation of the transcription factor NF- κ B, which plays a central role in inflammatory pathways. Helenalin also exerts immunomodulatory and antiproliferative effects, reducing swelling and pain in affected areas. Additionally, flavonoids such as quercetin, luteolin, isorhamnetin, and their glycosides provide powerful antioxidant activity, stabilize capillaries, reduce redness, and improve microcirculation. The essential oils in arnica contain camphor, 1,8-cineole, borneol, thymol, and caryophyllene, contributing to its antiseptic, antimicrobial, and refreshing effects. These also promote blood flow and support the resorption of bruises and hematomas. The extract also contains phenolic acids such as chlorogenic, caffeic, and ferulic acid, which offer strong antioxidant effects and stimulate cellular regeneration, enhancing the skin's resistance to environmental stressors. Triterpenes and phytosterols, including β -sitosterol, stigmasterol, and lupeol, assist in restoring the epidermal barrier and soothing inflammation. Polysaccharides present in trace amounts act as supplementary humectants, improving skin hydration and elasticity. The presence of coumarins such as scopoletin and umbelliferone provides mild anticoagulant and anti-inflammatory effects, further improving microcirculation and accelerating tissue recovery. Thanks to this complex composition, arnica extract is widely used in cosmetic formulations intended to reduce swelling, bruising, and irritation, as well as in products for tired, inflamed, or overworked skin and muscles.

Benefits:

- Reduces inflammation, redness, and swelling useful for eczema, dermatitis, and acne.

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- Soothes skin irritation, including itchiness caused by insect bites, rashes, or allergic reactions.
- Promotes healing of minor wounds, bruises, and cuts, accelerating recovery.
- Nourishes and hydrates skin, improving texture and moisture retention.
- Neutralizes free radicals, preventing premature aging, wrinkles, fine lines, and age spots.
- Enhances scalp health when used in hair care formulations.

Usage: Arnica extract is used at various concentrations depending on the cosmetic product type and desired effect:

Creams and lotions (anti-inflammatory & decongestant): 1%–5%

Serums and under-eye treatments: 0.5%–1%

Balms and gels (for muscle relief or bruises): 2%–10%

Toners or soothing mists: below 1%, in diluted form

It is added to the aqueous phase of O/W emulsions. For external use only.

Animal Testing: This substance has not been tested on animals.

GMO Status: Not genetically modified

Vegan Status: Contains no animal-derived ingredients

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