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Capsicum Annuum Extract

Product Name: Water-Glycerin Capsicum Annuum Extract

INCI Name: Glycerin, Aqua, Capsicum Annuum Extract, Benzyl Alcohol, Dehydroacetic Acid

CAS: 56-81-5, 7732-18-5, 84625-29-6, 100-51-6, 520-45-6

Botanical Name: *Capsicum annuum* L.

Chemical Classification: Mixture (botanical extract in a water-glycerin solvent system with preservatives)

Functional Category: Skin and hair conditioning agent, humectant, and emollient. In addition, due to its content of capsaicin and carotenoids, Capsicum Extract exhibits stimulating, rubefacient, and antioxidant properties, making it suitable for formulations designed to promote microcirculation and improve the tone and vitality of the skin and scalp.

Extraction Method:

The extract is produced using an ultrasonic extraction process employing ultrasound frequencies between **20 and 25 kHz**. At these frequencies, ultrasonic waves generate microscopic bubbles within the liquid containing the plant material, resulting in a phenomenon known as **cavitation**. Cavitation creates localized zones of extremely high pressure and temperature around the collapsing bubbles, mechanically disrupting plant cell walls and releasing intracellular bioactive compounds, thereby significantly improving extraction efficiency and yield.

The extraction process is carried out at **25°C** to preserve thermolabile constituents such as flavonoids, vitamins, and volatile compounds. Compared with conventional maceration techniques, ultrasonic extraction provides shorter processing times, higher extraction yields, and more efficient utilization of botanical raw materials.

The finished extract is preserved with **0.86% benzyl alcohol** and **0.14% dehydroacetic acid**, a preservative system approved for use in natural cosmetics and compliant with **ECOCERT** and **COSMOS** standards. The extract is water-soluble,

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allowing easy incorporation into a wide range of water-based cosmetic formulations. The finished extract has a pH ranging from **4.0 to 6.5**, making it suitable for most dermal applications without requiring significant pH adjustment.

Description:

Water-Glycerin Capsicum Annuum Extract (*Capsicum annuum* L.) is a multifunctional botanical ingredient widely used in cosmetic formulations for its stimulating and revitalizing properties.

Its phytochemical composition is rich in **capsaicinoids**, particularly **capsaicin**, which is responsible for the characteristic warming sensation and rubefacient effect that promotes skin microcirculation and contributes to a healthier, more vibrant appearance.

In addition to capsaicin, the extract contains **carotenoids, flavonoids, vitamin C**, and other naturally occurring antioxidants that help neutralize free radicals and protect the skin against oxidative stress.

The glycerin base provides excellent humectant properties, allowing the extract to deliver hydration alongside its stimulating and antioxidant benefits.

In hair care formulations, Capsicum Extract is valued for helping strengthen hair follicles and promoting improved nourishment of the scalp. In body care products, it enhances skin tone and vitality, making it particularly suitable for warming massage products and anti-cellulite formulations.

Thanks to the synergistic combination of moisturizing glycerin and the bioactive compounds naturally present in *Capsicum annuum*, this extract serves as a multifunctional cosmetic ingredient offering emollient, humectant, antioxidant, and stimulating properties in a single raw material.

Bioactive Compounds:

Capsicum Annuum Extract contains a diverse range of biologically active phytochemicals responsible for its cosmetic performance.

The principal active constituents are **capsaicinoids**, especially **capsaicin**, which stimulates peripheral circulation by activating transient receptor potential vanilloid-1

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(TRPV1) receptors. This activity produces a gentle warming sensation, enhances local blood flow, and contributes to improved skin vitality and scalp stimulation.

The extract also contains significant levels of **carotenoids**, including **capsanthin, capsorubin, beta-carotene, and lutein**, which exhibit potent antioxidant properties and help protect skin lipids and cellular structures from oxidative damage caused by environmental stressors.

Naturally occurring **flavonoids**, including **quercetin and luteolin derivatives**, further contribute antioxidant and anti-inflammatory activity, supporting the skin's natural defense mechanisms.

Vitamin C (ascorbic acid) promotes collagen synthesis, improves skin brightness, and protects against oxidative stress while supporting healthy connective tissue.

Small amounts of **phenolic acids**, including ferulic and caffeic acids, provide additional antioxidant protection and help stabilize the overall phytochemical profile of the extract.

The glycerin vehicle contributes moisturizing properties, enhancing skin hydration while facilitating the delivery of botanical actives into cosmetic formulations.

Benefits:

- Promotes skin microcirculation and provides a gentle warming effect.
- Exhibits antioxidant activity due to carotenoids, flavonoids, and vitamin C.
- Helps protect the skin against oxidative stress.
- Provides moisturization through the naturally occurring glycerin base.
- Strengthens hair follicles and supports healthier scalp conditions.
- Ideal for anti-cellulite, warming, and massage formulations.

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- Improves skin tone, firmness, and overall vitality.
- Helps revitalize tired-looking skin and scalp.

Recommended Use:

Water-Glycerin Capsicum Annuum Extract should be incorporated into cosmetic formulations at carefully controlled concentrations because of the presence of biologically active capsaicinoids.

The extract is preferably added during the **cool-down phase** to preserve the stability of its bioactive constituents and prevent degradation at elevated temperatures.

Recommended use levels include:

- **Anti-cellulite creams and gels: 0.5–2%**
- **Massage creams and warming body products: up to 1%**
- **Scalp tonics and hair growth serums: 0.2–0.5%**
- **Hair masks and conditioners: 0.5–1%**

In emulsion systems, the extract is best combined with emollients and soothing ingredients to minimize the possibility of excessive warming or tingling sensations.

The recommended formulation **pH is between 5.0 and 6.5.**

Use in products intended for **the eye area or other highly sensitive skin regions is not recommended.**

For external use only.

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Safety:

According to the final safety assessment published by the **Cosmetic Ingredient Review (CIR) Expert Panel** in the **International Journal of Toxicology (2007)**, cosmetic ingredients derived from *Capsicum annuum*, including **Capsicum Annuum Extract**, are considered **safe for use in cosmetic products** under the current conditions of use and at the reported concentrations.

The CIR assessment reviewed available toxicological, irritation, sensitization, and exposure data and concluded that cosmetic formulations containing Capsicum-derived ingredients, including concentrations up to approximately **5%** in certain product categories, do not present an unacceptable safety risk when formulated appropriately.

Because capsaicinoids possess stimulating properties, products containing Capsicum Extract should **not be applied to damaged or irritated skin** or to sensitive areas such as **the eye contour and mucous membranes**.

A mild warming or tingling sensation may occur following application, which is considered a normal physiological response associated with capsaicin activity.

Animal Testing:

In accordance with **Regulation (EC) No. 1223/2009 on Cosmetic Products**, this ingredient has **not been tested on animals**.

Its safety assessment is based on available toxicological data, scientific literature, and validated alternative testing methods, including **in vitro** and **in silico** approaches.

The term **in silico** refers to safety assessment methods performed using computer-based models and simulations rather than studies conducted on living organisms (**in vivo**) or cell cultures (**in vitro**).

This statement confirms compliance with the European ban on animal testing and is provided solely for informational purposes regarding the cosmetic use of this raw material.

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GMO: Non-GMO

Vegan: Contains no ingredients of animal origin.

Storage and Shelf Life:

Store in a cool, dry place in tightly closed containers. Shelf life is approximately **2 years** under recommended storage conditions.

