

TECHNICAL DATA SHEET

Product Name: Acetyl Dipeptide-1 Cetyl Ester

INCI Name: Water, Glycerin, Acetyl Dipeptide-1 Cetyl Ester, (+)-Arabinogalactan, 3-o-Ethyl Ascorbic Acid, Phenoxyethanol, Ethylhexylglycerin

CAS: 7732-18-5, 56-81-5, 196604-48-5, 9036-66-2, 86404-04-8, 122-99-6, 70445-33-9

Sequence: Ac-Tyr-Arg-O-hexadecyl ester

Chemical Classification: Emulsion dispersion of a lipo-dipeptide

Functional Category: Skin and hair conditioning agent. Neurosensory/lipo-dipeptide that reduces the sensation of tightness and micro-contractions, enhancing skin comfort and smoothness; suitable for sensitive areas such as the region around the eyes.

IUPAC Name: Hexadecyl (2S)-2-[[[(2S)-2-acetamido-3-(4-hydroxyphenyl)propanoyl]amino]-5-(diaminomethylideneamino) pentanoate
Ac-Tyr-Arg-cetyl ester

Description: Acetyl Dipeptide-1 Cetyl Ester is a synthetic peptide used in cosmetics for its soothing and anti-inflammatory properties. It acts by modulating nerve signal transmission and inhibiting the release of specific neurotransmitters, thereby reducing sensations of pain, discomfort, and irritation on the skin. At the same time, it stimulates the synthesis of endogenous peptides that help diminish inflammatory responses and strengthen the skin barrier. This ingredient supports skin regeneration and hydration, enhancing resilience against environmental stressors and reducing reactivity typical of sensitive skin. For this reason, it is often included in formulations designed for sensitive areas such as the eye region, as well as in treatments targeting redness and irritation. The combination of moisturizing and neurosensory action makes Acetyl Dipeptide-1 Cetyl Ester highly effective in skin care, particularly in anti-aging formulations. Its ability to promote the synthesis of elastin and tropoelastin has been confirmed through in vitro studies, showing up to a 90% increase in elastin fiber synthesis compared to control samples. These effects contribute to improved elasticity, firmness, and resilience of the skin, resulting in a smoother and more youthful appearance. Technically, the ingredient appears as a clear, colorless liquid without odor, containing approximately 2000 ppm of the active peptide, and is water-soluble.

Disclaimer: The details provided here are specific to the identified material and may not remain accurate if that material is combined with other substances or used in different processes. The information presented is, to the best of the company's knowledge, considered precise and trustworthy as of the date mentioned. However, the company does not make any explicit or implied assurance, guarantee, or claim regarding the information's precision, trustworthiness, or comprehensiveness, and will not be held accountable for any losses, damages, or costs, whether direct or indirect, that arise from its use. Users are encouraged to independently verify the appropriateness and thoroughness of this information for their specific purposes.

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Mechanism of Action: The mechanism of action of Acetyl Dipeptide-1 Cetyl Ester is based on neuromodulation and anti-inflammatory activity. This peptide inhibits the release of Substance P from nerve endings in the skin, thereby reducing exaggerated skin responses such as redness, stinging, and swelling caused by external stressors. Simultaneously, it stimulates the release of met-enkephalin, a natural opioid peptide that activates delta-opioid receptors, producing a calming and analgesic effect. The peptide also reduces the expression of pro-inflammatory cytokines (IL-1, IL-6, TNF- α), helping to soothe inflammation and strengthen the skin barrier. By activating fibroblasts, it promotes the synthesis of elastin and tropoelastin, improving skin tone and elasticity while indirectly protecting cells from oxidative and glycation stress. The result is visibly calmer, more resilient, and more elastic skin with reduced wrinkles and expression lines.

Benefits: Acetyl Dipeptide-1 Cetyl Ester soothes irritated skin by inhibiting the neurotransmitter Substance P, reducing redness and irritation, especially in conditions such as rosacea and acne. It may help reduce skin sensitivity by modulating the perception of discomfort. In anti-aging formulations, it supports collagen production and improves skin elasticity.

Usage: Acetyl Dipeptide-1 Cetyl Ester is used in cosmetic formulations at very low concentrations due to its high biological activity. It is typically applied at concentrations of 0.05–0.1% in finished products, with lower concentrations suitable for formulations intended for sensitive skin and areas such as the eye region, and higher concentrations used in anti-aging products designed to enhance tone and elasticity. In products such as day and night creams, lotions, serums, and emulgel formulas, the peptide is added during the final phase of processing, when the formulation temperature is below 40 °C, to prevent degradation of the active substance. The optimal pH range for the formulation is between 5.0 and 6.5, ensuring peptide stability and compatibility with most emollients, humectants, and antioxidants. When combined with ingredients that reinforce the skin barrier, such as glycerin, hyaluronic acid, and polysaccharides (e.g., arabinogalactan), it achieves a synergistic effect that reduces irritation, increases elasticity, and softens fine lines. In this way, Acetyl Dipeptide-1 Cetyl Ester demonstrates optimal efficacy within a concentration range that provides a visible yet gentle and stable cosmetic effect.

Animal Testing: In accordance with current European regulations (Regulation (EC) No

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1223/2009 on cosmetic products), the substance has not been tested on animals. The safety assessment of the raw material is based on available toxicological data, scientific literature, and validated alternative testing methods (in vitro and in silico). In silico refers to testing and evaluation methods conducted using computer models and simulations, rather than laboratory testing on living organisms (in vivo) or cell cultures (in vitro). This note confirms compliance with the animal testing ban and is provided solely for informational purposes regarding further use of the raw material in cosmetic formulations.

GMO: Not GMO

Vegan: Contains no animal-derived components

Storage: It can be safely transported at temperatures up to 25 °C, as it maintains stability during short-term exposure to higher temperatures. However, for long-term storage, refrigeration between 4 °C and 8 °C is recommended, as peptides are sensitive to degradation due to prolonged exposure to heat, light, and moisture. Lower temperatures slow the degradation process and help preserve bioactivity. Proper storage in refrigeration maintains the peptide's efficacy and stability throughout its declared shelf life.

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