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+381 (0) 69 / 55 65 029
www.avenalab.com

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Product Name: Hexapeptide-11

INCI Name: Water, Glycerin, Hexapeptide-11, Caprylyl Glycol, Ethylhexylglycerin

CAS: 7732-18-5, 56-81-5, 161258-30-6, 1117-86-8, 70445-33-9

Synonyms: L-Phenylalanyl-L-valyl-L-alanyl-L-prolyl-L-phenylalanyl-L-proline; L-Proline, 1-[N-[1-[N-(N-L-phenylalanyl-L-valyl)-L-alanyl]-L-prolyl]-L-phenylalanyl]-; Peptamide 6; H-Phe-Val-Ala-Pro-Phe-Pro-OH; H-FVAPFP-OH

Chemical Classification: Mixture

Functional Category: Skin and hair conditioner

Sequence: Phe-Val-Ala-Pro-Phe-Pro

IUPAC Name: (2S)-1-[(2S)-2-[[(2S)-1-[(2S)-2-[[(2S)-2-[[(2S)-2-amino-3-phenylpropanoyl]amino]-3-methylbutanoyl]amino]propanoyl]pyrrolidine-2-carbonyl]amino]-3-phenylpropanoyl]pyrrolidine-2-carboxylic acid

Physical-Chemical Properties: Hexapeptide-11 is a compound consisting of six amino acids. The structure of this peptide includes a specific sequence of amino acids: Val-Gly-Val-Ala-Pro-Gly. The amino acids Valine (Val) and Glycine (Gly) are repeating acids in the sequence and appear twice. Peptide bonds are formed between the carboxyl group of one amino acid and the amino group of the next amino acid, creating an amide bond (-CO-NH-). For example: Valine-Glycine bond: COOH group of Valine and NH2 group of Glycine form a peptide bond: Val-CO-NH-Gly. Each of these amino acids contributes to the functional properties of the peptide in different ways. Valine is a non-polar, hydrophobic amino acid that contributes to the stability of the peptide in hydrophobic environments, such as the lipid layers of the cell membrane. Its hydrophobic nature helps maintain the structural stability of the peptide, reducing chain flexibility. Glycine, as the smallest amino acid, allows high flexibility of the peptide chain, which is important for conformational changes. Glycine has no side chains, allowing the peptide to take on various spatial conformations. Repeating valine increases hydrophobic interactions within the peptide, further increasing stability and resistance to denaturation. Alanine is a small, non-polar amino acid that helps maintain the compact structure

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of the peptide. Its simple side group (methyl) does not create obstacles or steric hindrance, allowing the peptide to easily fit into different structural arrangements. The amino acid proline, due to its cyclic structure, introduces a bend or twist in the peptide chain, which can affect the spatial configuration of the peptide. Proline contributes to the rigidity and reduced flexibility of the peptide chain in its vicinity. The repetition of glycine contributes additional flexibility to the peptide chain, allowing the peptide to adapt to different environments and conditions. Hexapeptide-11 was originally isolated from yeast extract and later synthetically produced in the laboratory. In vitro genomic studies conducted on human dermal fibroblasts have shown that it regulates critical genes responsible for the production of collagen and important components of the extracellular matrix, such as hyaluronic acid. Clear transparent liquid, odorless. Peptide content 2000 ppm. pH 4.5-7.0

Action on Skin and Hair: Hexapeptide-11 penetrates the skin and binds to receptors on the cell surface. It stimulates cellular activity and increases oxygen consumption in the cell. Clinical studies have shown that it increases the synthesis of collagen and elastin, which help firm and maintain the integrity of the skin. It increases skin tone and simultaneously reduces the appearance of fine lines and wrinkles. It is used for remodeling facial contours and for skin hydration. In hair products, it is used to increase collagen and elastin in the scalp to make hair healthier. It is believed to affect the main biochemical pathways responsible for converting young vellus hair into mature terminal hair.

Benefits:

• ***Increases Collagen Production:*** The production of collagen involves complex processes of synthesis, modification, secretion, and organization of collagen fibers. Hexapeptide-11 acts at various levels of this process. It stimulates fibroblasts, increasing the production of procollagen by enhancing the expression of genes that encode collagen. It can also improve post-translational modifications such as hydroxylation and glycosylation, which are crucial for the stability of collagen fibers. Increased collagen production helps maintain skin firmness and elasticity.

• ***Increases Elastin Production:*** Hexapeptide-11 can significantly affect the synthesis of elastin, contributing to improved skin elasticity and resilience. By stimulating fibroblasts responsible for the synthesis of tropoelastin, it increases the production of this precursor. Hexapeptide-11 enhances the expression of genes that encode elastin, resulting in increased tropoelastin synthesis. Additionally, it improves post-translational modifications of tropoelastin, including hydroxylation and glycosylation, which

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are crucial for proper elastin functionality. Hexapeptide-11 can also influence the interactions between tropoelastin and fibrillin microfibrils, improving the formation and stability of elastin fibers.

• ***Reduces Wrinkles and Fine Lines:*** Regular use of products with Hexapeptide-11 can help reduce the appearance of wrinkles and fine lines due to improved skin structure and elasticity.

• ***Promotes Skin Regeneration and Renewal:*** Hexapeptide-11 helps accelerate skin renewal processes, resulting in a fresher and more youthful appearance. It also aids in the faster healing of minor skin damage.

• ***Improves Skin Tone:*** Enhances overall skin tone, making it firmer and smoother.

• ***Enhances Hair Growth:*** Hexapeptide-11 can stimulate hair follicles, resulting in increased hair growth. This is especially beneficial for individuals with thin or sparse hair.

• ***Strengthens Hair Follicles:*** Strengthens hair structure, reducing breakage and split ends, making hair more resilient and healthier.

• ***Improves Hair Texture:*** Regular use of products with Hexapeptide-11 can improve hair texture, making it softer and shinier.

Usage in Cosmetic Products: Add to the aqueous phase of the formulation at temperatures below 40°C. It can be combined with hyaluronic acid, amino acids, and facial oils. Typical recommended concentrations range between 1 to 5%.
For external use only.

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

GMO: Not GMO

Vegan: Contains no animal-derived components

Storage: Store in a refrigerator at temperatures between 4 and 8°C.