

FICHA TÉCNICA

Proteína de seda



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I INCI Name

US: Water, Hydrolyzed Silk

EU: Aqua, Hydrolyzed Silk

N.B. For full and up-to-date INCI listing please see proprietary composition declaration

II History of Silk^{1,3}

Silk fibre is produced as a cocoon covering the silkworm and is valuable for its use in fine fabrics and textiles. It has been produced in China for over 4,500 years. The silkworm, in fact, is not a worm but a caterpillar which develops into a moth. Although cocoon coverings of fibre are made by a large number of insects, only those of the mulberry silk moth, *Bombyx mori* and a few other moths closely akin to it, are used by the silk industry.



III Product description

Sericin is a water-soluble protein. When it is dissolved in a polar solvent, hydrolysed in acid or alkaline solutions or degraded by a protease, the size of the sericin molecules depend on factors such as pH, temperature and processing time. Lower weight sericin peptides (<20kDa) or sericin hydrolysates are used in cosmetics including both skin and hair care products.

IV Main Components^{1,4,5,7,8}

The following substances are listed in the literature as components of silk:

a. Essential amino acid profile:

Alanine ca. 27.0 %
 Arginine ca. 1.0 %
 Asparatic Acid ca. 1.5 %
 Cystine/ Cysteine ca. 0.5 %
 Glutamic Acid ca. 1.5 %
 Glycine ca. 38.0 %
 Histidine ca. 0.5 %
 Isoleucine ca. 1.0 %
 Leucine ca. 0.5 %
 Lysine ca. 0.5 %
 Methionine ca. 0.5 %
 Phenylalanine ca. 1.0 %
 Proline ca. 0.5 %
 Serine ca. 13.0 %
 Threonine ca. 1.0 %
 Tyrosine ca. 9.5 %
 Valine ca. 2.5 %

b. **Flavonoids:** found in higher levels in coloured silk cocoons; flavols (3 quercetin glycosides)

The sericin protein is made up of 18 amino acids most of which have strongly polar side groups such as hydroxy, carboxyl and amino groups.

V Cosmetic Application

The following cosmetic related activities of the plant are extracted from the literature:

Properties	Suggested cosmetic applications*
Essential protein source for skin & hair care products ^{4,7}	Skin care
Substantive to hair, repairs damaged hair ⁹	Hair care
Conditions hair ⁹	Bath & shower products
Antioxidant, free radical scavenger, inhibits lipid peroxidation ^{5,6,7}	Wet-wipes
Absorbs & releases moisture easily ⁷ , moisturizing ^{9,10}	
Antibacterial ⁷	

*Disclaimer: Please be aware that: 1. The listed properties medicinal or otherwise, have been sourced from literature and should act as value-added information only. 2. No proof of these statements by testing or otherwise will be provided by Lipoid Kosmetik AG. 3. The use of any claim on cosmetic products is the sole responsibility of the customer and is regulated by your own Regulatory Body.

Recommended level of use: 1-5%
 Use in hair and skin care products.

Recommendations for application of Silk Extract COS (PF):

- For use in products to give a “soft” feel
- In W/O or O/W formulations and rinse-off products
 - As a liquid additive easy to incorporate together with the water phase. The product is not exceptionally heat sensitive.

Medicinal and other uses^{2,7}

In Chinese medicine, the silk cocoon is used as an anti-emetic, anti-helminthic and in diabetes mellitus. Sericin is highly biodegradable and environmentally friendly biodegradable polymers can be made by blending it with other resins. It is also used to make membranes for separation technologies, for coating of functional materials and fabrics and in the manufacture of medical biomaterials.

VI Storage and Safety

Storage

We recommend storing this product at room temperature (20-30 °C), protected from any humidity and direct sun light.

Maximum recommended storage time:

According to the certificate of analysis (between 6 and 12 months) when kept in original sealed cans or drums.

Once the container is opened, the product has to be handled with care to avoid microbiological contamination.

Safety in Use

We affirm to the best of our knowledge the compatibility and non-toxicity of this product. It is safe for use at normal levels in skin and hair cosmetics. Nevertheless, this statement does not release the producer of the finished cosmetic product from the responsibility of conducting any tests required by local legislation. If applicable, please consult our list of allergens for the product (list acc. to EU cosmetic legislation).

Options

On request, most of our plant extracts are available in the following variations:

- Silk Extract 80% PG unpreserved
- Silk-Protein in Ethanol

References

1. History of Silk <http://www.silk-road.com>
2. Keys, John, D. (1976) Chinese Herbs: Their Botany, Chemistry and Pharmacodynamics PUB. Charles E. Tuttle Company Selk.
3. K. Secrets of Silk <http://www.treenwaysilks.com>
4. Agrawal, P. & Gopinathan, K.P. (1988) Analysis of nuclear proteins from silk glands of *Bombyx mori*. J Biosciences, Dec 13 (4): 379-91.
5. Yamazaki, M. Silk Research Institute : Study of functional characteristics of silk proteins and their application as a new biomaterial.
6. Kurioka, A. & Yamazaki, M. (2002) Purification and identification of flavonoids from the yellow cocoon shell (sasamayu) of the silkworm, *Bombyx mori*. Biosci. Biotechnol. Biochem. 66, 1396-1399.
7. Zhang, Y-Q (2002) Applications of natural silk protein sericin in biomaterials. Biotech. Advances, 20, 91-100.
8. Kato, N. et al. (1998) Silk protein, sericin, inhibits lipid peroxidation and tyrosinase activity. Biosci. Biotech. Biotechnol. Biochem. 62 (1) : 145-7.
9. Daikai, S. et al. (2000) Research on function of silks and their derivatives. Properties of hydrolysed silks and their derivatives Fragr.J. 28(4): 22-27.
10. Padamwar, M.N. et al. (2005) Silk sericin as a moisturizer : an *in vivo* study J. Cosmet. Dermatol. 4 (4): 250-7.