

LEBENSMITTELCHEMISCHE GESELLSCHAFT
 - Fachgruppe in der GESELLSCHAFT DEUTSCHER
 CHEMIKER -
 Arbeitsgruppe Kosmetische Mittel

Data sheets on the use of active ingredients in cosmetic products

Proteins
Part 2: Native proteins, vegetable

1 Definition

Proteins are naturally occurring macromolecules consisting of long chains of at least 100 amino acids linked by peptide bonds [1][2].

In protein chemistry, the native state is the state in which the protein is found in the living organism. **Native proteins** are protein compounds in which the order of the amino acids (amino acid sequence, primary structure), the spatial arrangement (secondary and tertiary structure) and thus the natural activity are preserved [1][3][7].

Gliadins are alcohol-soluble storage proteins (prolamins) in wheat grains.

2 Active substances used

Proteins that are used include a high molecular weight wheat protein extracted from wheat flour, a *Hibiscus* protein extracted from the seeds of *Hibiscus esculentus* and a protein extract extracted from soybeans [50][51][52][53][54].

Trivial name	INCI- Designation	CAS number
Wheat protein (wheat gliadins)	Triticum Vulgare, Wheat Germ Protein	-
Hibiscus protein	Hibiscus Esculentus	999999-99-4
Soy protein	Glycine soy	9010-10-0

3 Application as a cosmetic active ingredient

With native high molecular weight proteins, the film-forming and hydrating properties are pre- dominant.

The described **wheat gliadins** (molecular weight 28- 79 kDa) are dissolved in glycerine. Due to their film-forming properties, they influence skin moisture and smoothness - similar to collagen -, attach themselves to the outside of preferably damaged hair areas and improve hair properties such as tensile strength, elasticity and shine [50][51][52].

The properties of the **soy protein** described (molecular weight 50 kDa) are comparable to those of serum albumin [54]. These high-molecular preparations form a transparent film that changes its spatial structure during drying and is thus able to stretch the underlying tissue. This purely physical effect leads to wrinkle smoothing [54][55][56].

4 Recommendations for use

The following application concentrations are recommended: Hibiscus protein 0.06- 0.24 %, soy protein 0.05- 0.65 % (source: manufacturers' data sheets).

5 Described application and effect concentrations

Substance	Demonstrable effect	Effective concentration
Wheat protein (wheat gliadins)	Increase of skin moisture, reduction of skin roughness Increase of tensile strength and shine of the hair, improvement of elasticity in wet hair	0,5-1 % [50] 0,2 % [51][52]
Hibiscus protein	Hydration of the horny layer, skin tightening	0,14- 0,25 % [53]
Soy protein	Wrinkle smoothing effect, improvement of skin elasticity	0,45- 0,65 [54]

All concentration data refer to the protein content (active substance) of the commercial product or the test formulation.

Note: The general notes and recommendations of this data sheet series must be taken into account, as well as the legal standards currently in force.

6 Literature

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