Polymerisation of the Natural Proteins: a New Generation of Tensor Active Ingredients in Cosmetics

Authors: Catherine Lenaers, Fabien Crémilleux, Emilie Perez, Michel Dana, Brigitte Closs, Silab, France.

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Abstract

The most important characteristic responsible for film forming, tensor and smoothing properties of a protein is its capacity to adsorb and to spread at the skin surface to form a smooth, elastic, cohesive and continuous film. The skin surface gets smoother, wrinkles seem attenuated and the skin looks younger.

Protein of high molecular weight are slightly soluble and stable in an emulsion and lead to an anarchic arrangement of aggregates that are not inclined to form a continuous protein film with smoothing properties.

A new molecular approach of tensor properties of high molecular weight proteins was investigated thanks to an innovative technology: the polymerization.

The polymerization allows to obtain arranged architecture capable of forming a continuous and elastic film. Polymerized proteins from natural proteins insure a better solubility and stability in emulsion.

This original technology allows to create a three dimensional network of high molar mass capable to lead to a molecular architecture perfectly adapted in improvement of the biomechanical properties of the skin by adsorbing on skin lipids.

To assess the tensor effect of an active ingredient, the strategy relies on 3 criteria:

- Assessment of biomechanical properties
- Study of the immediate anti-wrinkles
- Sensorial study thanks to a consumer test

Introduction

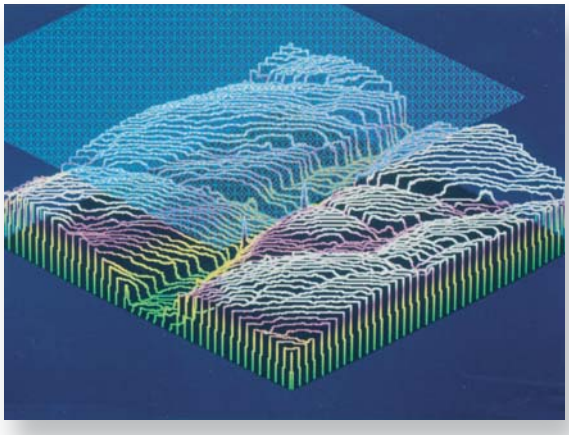
After the age of about 50, women experience a slackening of their skin, a loss of elasticity and tone. Externally, the marks of cutaneous aging result primarily in the appearance of more or less marked wrinkles which are accentuated on the photo-exposed body areas such as the face, the neck or hands. In order to “erase” the effects of aging, consumers are eager to test an entire range of anti-wrinkle substances and at the same time undergo plastic surgery for a face lift and to fill in wrinkles.

The anti-aging care products segment is very promising for the cosmetics industry. Even so, this market must take into account its consumers’ needs and provide the user with a visible and immediate anti-aging effect. The current trend thus consists of including in the anti-wrinkle creams, tensor active ingredients likely to smooth the skin, to rejuvenate it and to fight against the harmful relaxation and effects of gravity.

The tensor active ingredients have as a principal property, the capacity to be adsorbed and to be spread out on the surface of the skin to form an elastic, cohesive and continuous film supporting the smoothing of the skin (figure 1).

The tensor effect is characterized by an apparent and immediate reduction of the wrinkle depth, leading to a smoother aspect of the skin.

Before treatment



2 hours after treatment

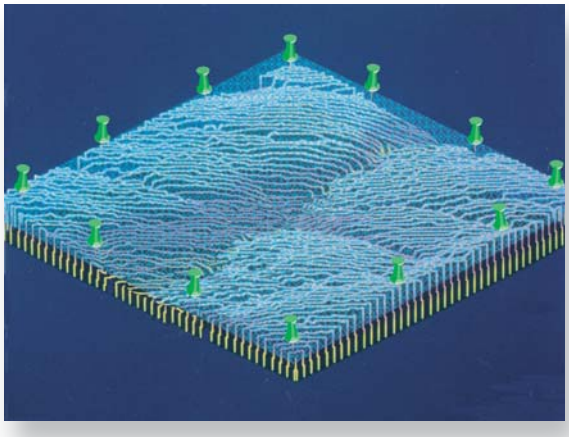


Figure 1: Mechanism of action of a tensor active ingredient