

Care  
Creations™

Beauty  
Creations



**Firmiderm™**

Botanical Skin Firming

**Skin Care**

**BASF**

We create chemistry

## Aging and cutaneous tone

According to Le Bozec and Belaïch, cutaneous aging is characterized by the deterioration of the cutaneous coating, resulting from years of accumulation of progressive modifications of its different constituents. Today, we are able to distinguish that this deterioration process is caused by two mechanisms:

- inevitable intrinsic aging changes that are especially found on photo-protected areas
- aging caused by environmental factors, the first being the actinic factor that occurs on photo-exposed areas where one could take preventive measures

Indeed, these two processes have different clinical demonstrations and different cellular, biological, biochemical and molecular mechanisms. If, during the aging process, all the structures of skin are altered, some fundamental changes prevail in the dermis. It is the functional attack on the fibroblast and the *interstitium* that seems to have the most important role in the development of cutaneous aging. The intrinsic and actinic aging processes are both characterized by a decrease in the normal and therefore functional elastic fibers. The structural modifications, at the dermal level, include alterations of elastic fibers and collagen, modifications of fibroblasts, such as their depletion, the reduction and loss of cohesion with the *interstitium*; and other

modifications, such as the alteration of the microcirculation which decreases and becomes disorganized. The mechanical properties of skin: skin can be considered like a visco-elastic material which is not linear, nor homogeneous. There are numerous methods used to explore the extensibility and the elasticity of skin. These two parameters characterize skin aging by showing its resistance to the distortion and its capacity to regain its initial state after distortion. The tonometry measures the extensibility of skin in a perpendicular plane to its surface. It consists in progressively applying a constant traction at the skin's surface and measuring the distortion on it. It uses the suction of the skin to evaluate the vertical extensibility (cutometer).

## Definition / Composition

Firmiderm™ is an original, patented active ingredient, consisting of a synergistic combination of plant substances. It was especially developed to bring tensor, firming and astringent effects to the skin. Firmiderm™ is composed of substances and plant extracts from three plants, one of which being from a new patented exotic origin:

- *Terminalia catappa* leaves (*Combretaceae*) polyphenols
- *Sambucus nigra* L. flowers (*Caprifoliaceae*) polyphenols and flavonoids
- *Castanea vulgaris* (*Fagaceae*) Chestnut tree tannic acid

## Brief Overview: Firmiderm™ LS 9120



**INCI:** Terminalia Catappa Leaf Extract\* (and) Sambucus Nigra Flower Extract\*\* (and) PVP (and) Tannic Acid

**China registration:** INCI name is listed in "Inventory of Existing Cosmetic Ingredient in China 2015" (IECIC 2015). CAS number is listed (or exempted) in "Inventory of Existing Chemical Substances in China 2013" (IECSC 2013).

**Appearance:** limpid liquid, mahogany brown, of characteristic odor.

**Preservative:** Phenoxyethanol

**Recommended dosage:** 3 %

**Mode of incorporation:** Firmiderm™ is incorporated into the cosmetic product below 50°C, during the finishing process or at room temperature for cold processing. Suitable pH 4.5 to 6.

\* Containing Terminalia Catappa Leaf Extract (~0.30 % dry extract and 55 % water)

\*\* Containing Sambucus Nigra Flower Extract (0.30 % dry extract), 4.8 % water and propylene glycol

## Skin benefits

Thanks to the synergistic effect of its botanical extracts, rich with polyphenols and flavonoids, Firmiderm™

- reinforces the skin elasticity and tonicity, while reducing cutaneous hyperlaxity
- provides an anti-age action by tissular structuring effect and encourages the improvement of microcirculation

## Efficacy

### Improvement of skin elasticity (clinical study)

#### Aim

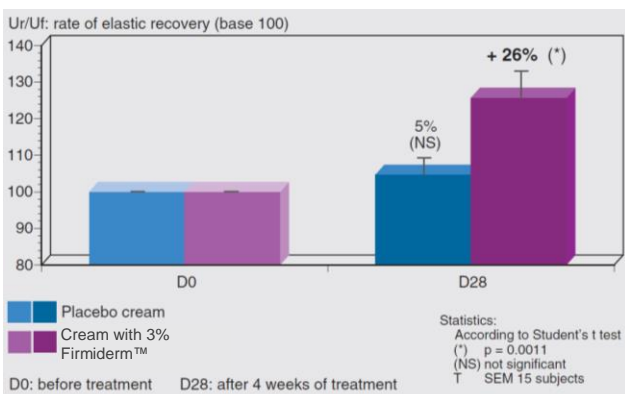
Demonstration of the improvement of cutaneous elasticity using a cream containing 3% Firmiderm™.

#### Protocol

Study conducted in double blind with randomization on 15 female volunteers with an average age of 58 years old, who have distended skin with a loss of elasticity on the external side of their forearms. Twice daily treatment (in the morning and in the evening) for 4 weeks, without the use of any other products, of a placebo cream on the external side of one and a cream with 3% Firmiderm™ of the other forearm.

Quantitative measurements of the cutaneous elasticity 12 hours after the last application.

#### Result



## Conclusion

The cream containing 3% Firmiderm™ improved significantly the cutaneous elasticity and tonicity by + 26% after 4 weeks of treatment. The placebo cream, in the same experimental conditions, did not modify this cutaneous parameter.

### Improvement of skin firmness (clinical study)

#### Aim

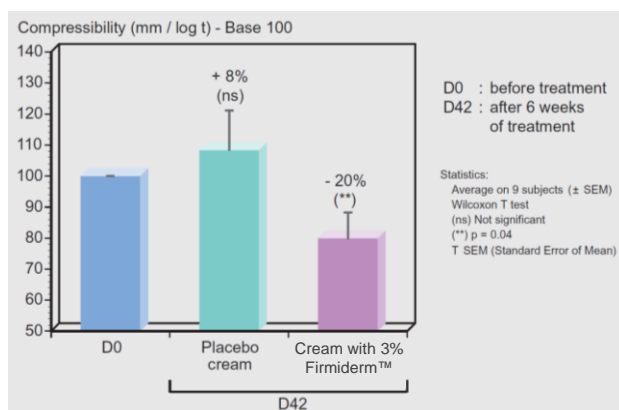
Demonstration of the improvement of cutaneous firmness using a cream containing 3% Firmiderm™.

#### Protocol

Study in double blind with randomization conducted on 9 female volunteers aged from 46 and 66 years old having a loss of skin firmness on the forearm. Twice daily treatment (in the morning and in the evening) for 6 weeks, without the use of any other products, of a placebo cream on the external side of one and a cream with 3% Firmiderm™ of the other forearm.

Quantitative evaluation of the cutaneous firmness by measurement of skin compressibility with the dermofirmometer. The firmer the skin, the higher is its compression resistance, the lower is the compressibility.

#### Result



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