Stromaderm® Reduces the Appearance of Facial Aging Signs

Skin aging involves both chronological (by intrinsic factors) and photo-aging (by extrinsic factors). The inevitable decrease in metabolism and renewal of the skin dermis leads to dryness, thinning, fine lines, and loss of elasticity, which is accelerated and worsened by UV exposure. At molecular and cellular levels, the skin loses its youthful appearance when the healthy functions of stromal cells that support the connective tissue diminish, along with the degeneration of key molecules, such as collagen and HA that underlie skin firmness, hydration, and smoothness.

Stromaderm is formulated as an age-defying serum with its key ingredient, patented, award-winning BioCell Collagen CG that offers a synergy of ground-breaking hyaluronic acid (HA) and collagen peptides. Infused with an antioxidant blend and skin tightening complex, Stromaderm is designed to nourish the dermal stroma, increasing the speed at which the skin appears firmer, repaired, and renewed.

Human Skin Study

In 2012, JUSURU International, Inc. performed a breakthrough human skin study on Stromaderm, enrolling women in their thirties to fifties who underwent both natural and photoaging processes. This study revealed a key mechanism elicited by daily application of the advanced serum in association with the significant improvement of facial aging signs. As a result, the majority of the study participants experienced younger-looking skin with better texture.

I. Safety

The tolerance of Stromaderm application was measured objectively, as well as subjectively. Facial skin of each subject was evaluated for tolerance indicators at the week 0 (baseline) and week 8 visits, including dryness, erythema, and edema. On the other hand, the indicators for subjective irritation sensation included stinging, tingling, itching, and burning. No significant changes from baseline were noted for the objective or for the subjective tolerance assessments at the week 8 visit, demonstrating that Stromaderm was well tolerated and safe for daily application.

II. Scientific Bioinstruments Test Methodology

All subjects followed supplied product usage instructions for eight weeks. Facial skin condition was clinically graded by visual inspection using standard visual analogue scales (VAS) and ordinal scales. Instrumental assessments were also performed using the MoistureMeterSC, SIAscope, and Clarity™ Pro (subgroup of fifteen subjects).
All subjects’ facial skin was evaluated using the MoistureMeterSC and SIAscopy. Clarity™ Pro images were captured on subjects. Subjects equilibrate their facial skin to ambient indoor temperature and humidity for at least fifteen minutes prior to any instrumental evaluations.

**MoistureMeterSC**

The measurement of skin surface hydration at stratum corneum level was assessed using the MoistureMeterSC, a laboratory grade instrument that measures skin hydration, sensitively and accurately. The MoistureMeterSC’s probe measures the capacitance of the layered structure, stratum corneum and the underlying skin layers. The measured capacitance is directly proportional to the water content of stratum corneum. The measurement frequency is 1.25 MHz. The effective measurement depth of the MoistureMeter SC depends on the thickness of the dry layer and is thus dependent on the individual subject’s skin condition. One measurement was taken on each subject’s right cheek skin at the week zero (baseline), week four and week eight visits.

**COSMETRICS™ SIAscope**

Non-invasive Spectrophotometric Intracutaneous Analysis, or Chromophore Mapping, was employed. The technique is based on a unique combination of dermatoscopy and contact remittance spectrophotometry. The hardware consists of a hand-held imaging probe attached to a laptop computer. The unit is placed in contact with the skin surface and high-intensity LED’s illuminate the skin as discreet wavelengths of 400 to 1000nm, spanning the visible spectrum and a small range of the near infrared spectrum. A digital image is captured for each wavelength.

Three parametric chromophore maps were retrieved, up to 2mm in depth and 11mm in circumference, one for each of the following parameters: epidermal melanin, dermal hemoglobin and dermal collagen. SIAscopy was performed on each subject’s left cheek skin at the week zero (baseline) and week eight visits.

**Clarity™ Pro**

The Clarity Pro Study Manager imaging system captures full face, frontal and 45° lateral, images in multi-spectral lighting. White Light and deep blue light images reveal skin conditions on and beneath the skin’s surface layer. The system uses cutting edge technology for skin feature recognition and extraction to allow for subsequent skin analysis. One lateral (left) image was taken on a subgroup of fifteen subjects at the week zero (baseline), week four and week eight visits. Images have been analyzed for wrinkles in the crow’s feet area.

### III. Age-defying effects

1. Nourishing the skin with patented collagen peptides and hyaluronic acid (HA)

![Figure 1](image)

**Figure 1. A synergy between collagen peptides and HA**

Figure 1 shows the unique molecular nature of BioCell Collagen CG, containing a naturally-occurring matrix of collagen peptides and HA. This patented composition is the very basis for a synergy of these vital molecules, harboring biological properties that help the skin look healthier with better moisturization.
2. Improving the appearance of wrinkles and deep lines

Figure 2. Stromaderm reduced facial aging signs

Appearance of visible aging signs, such as wrinkles and deep lines in the full face was measured before and after daily application of Stromaderm by bioinstrumentation that allowed image analysis. Figure 2 shows that appearance of wrinkles was improved on average by 18.3% in terms of severity and by 19.3% in terms of length, respectively. Appearance of deep lines was also improved on average by 48.5% after 8 weeks of Stromaderm application.

These skin-beautifying effects appeared to have reached a peak level within several weeks because they were already evident 4 weeks after its application, which remained stable until the end of study. It was considered that the significant attenuation of these aging signs was associated with effective nourishment of dermal stroma through a synergy of collagen peptides and HA.

3. Increase in skin collagen content

Figure 3. Stromaderm increased collagen content in the skin dermis.

Current scientific research suggests that a key event of skin aging is the loss and deterioration of collagen network from the skin dermis. Collagen content starts to decrease around the age of thirty, contributing to sagging and generation of fine lines and wrinkles. Any effective skin care product should safely and effectively address aging-associated reduction of collagen from the dermis.

Employing a bioinstrumental technique called SIAscope, the content of collagen (type I and III) in the skin dermis was measured before and after daily application of Stromaderm. Figure 3 shows that collagen content in the face increased 31.7% on average 8 weeks after application. This data suggested that Stromaderm affected the metabolism of collagen in the dermis that is key to natural and photoaging processes and that the breakdown of dermal connective tissue can be attenuated or delayed by daily use of Stromaderm.
4. Responses of study subjects

![Figure 4. Positive perception of study subjects on skin appearance](image)

At the end of the study, questions regarding subjective perception on the effects of Stromaderm were given. Figure 4 shows that the majority of 50 subjects reported positive experience from daily use, which ranged from enhanced hydration (78.8%), better skin tone and smoothness (72.7%) to attenuated appearance of fine lines and wrinkles, both in crow’s feet (72.7%) and in global face (69.7%). These subjective responses from study participants were consistent with their younger-looking appearance as manifested by significantly improved facial aging signs, evaluated by objective and quantitative bioinstruments (Figures 2 and 3).

Summary

The 8-week human skin study on Stromaderm demonstrated the following:

1. Daily application was safe, non-irritating, and well tolerated
2. Improved appearance of lines/wrinkles of the crow’s feet area and face
3. Improved appearance of skin tone and texture/smoothness
4. Improved skin hydration
5. Improved collagen content
Before and After Images

![Before and After Images](image)

Actual untouched results

References


6. William, J. 2004. Clinical study shows hyaluronic acid in BioCell Collagen II® found to have significant absorption and bioavailability. SIBR.