CLINICAL STUDIES OF A NEW AVOCADOFURANE® CONTAINING CREAM FOR THE PREVENTION OF CUTANEOUS EXTRINSEC AGING

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Introduction

Aging is a natural phaenomena which affects the entire body. Its mechanisms are not yet fully understood : Pre-determined genetic clock? Accumulation of DNA damages? Role of oxygen free radical species? It seems that extrinsic factors play a major role during aging.
A study with monozygote twins showed that environmental factors (health, lifestyle, sun exposures, nutrition…) represent 75% of aging and that the genetic part is only 25%.
Skin aging of the face may appear very early because it is constantly exposed to environmental aggressors: UV radiations, wind, cold, cigarette smoke, pollution… Clinical stigmata of skin aging may appear as early as 25 or 30 years old with small lentigines, skin dryness and development of peri-buccal wrinkles.

1. Recent developments in the pathophysiology of skin aging : the role of MMPs and TGF beta.

Two novel ways of understanding skin aging have been discovered during the past 5 years. The first one is the up-regulation of dermal enzymes called MMPs (Matrix Metallo-Proteases) and thus the rupture of a steady-state between these lytic enzymes (collagenases, gelatinases, stromelysines) and their natural inhibitor TIMPs (Tissue Inhibitors of MMPs). The result is a slowly increasing loss of dermic collagen, which is largely aggravated by sun-exposures.
The second one is the spontaneous and UV-induced down-regulation of a cutaneous growth-factor called TGF beta1 (Transforming Growth Factor-β1) which contributes to the chronic loss of collagen bundles in the dermis, first step in the development of wrinkles.
Its natural role is the stimulation of the synthesis of the extra-cellular matrix (ECM), especially the transcription, maturation and secretion of collagen fibers.

2. Innovation in skin aging : Avocadofurane® & Pentapeptides, two original patented molecules.

Avocadofurane® is a new natural and original molecule. This specific fraction of avocado unsaponifiable has a double cutaneous impact. Firstly, it stimulates TGF-beta synthesis in human cultured fibroblasts which in turn increase their collagen fibers production.
Secondly, it enhances the lipids rate within the epidermis.
Pentapeptides, issued from white lupine, have been developed to inhibit the UV-induced stimulation of MMPs and thus to prevent collagen degradation.
Avocadofurane® (1%) and patented Pentapeptides (2%) have been formulated with vitamin C glucoside (2%) in an anti-age product.

The present work delineates the efficiency of this specific daily care cream and summarizes the results obtained from two independent trials performed under dermatological control.

Protocole

- Trial A : conducted on 28 females (mean age 29, sensitive skin 50%) under dermatological control, with twice daily applications for 8 weeks and evaluations at W0 , W4 and W8.

Clinical and biometrological evaluations were performed at each visit :
- Clinical evaluation by a dermatologist (smooth aspect, brightness and uniformity of complexion)
- Silicone replicas (Siflo®) of the crow's foot areas with video-microscopy analysis of the micro-relief
- Corneometry on the cheeks for hydration evaluations.

Statistical evaluations used t Student test and Wilcoxon tests.

- Trial B : Clinical multicentric study (18 dermatologists) on 118 young females (25-38 years old) who have applied the product twice daily for 22 weeks.

- Evaluations at W0, W6, W14 and W22, with dermatologic examinations and auto-evaluation questionnaires.

Results

- Trial A

All clinical and biometrological data showed a marked improvement with statistically significant results at W4 and W8 compared to the initial state.
- Hydrative properties (Figure 1) : +13% skin hydration at W4 and +15% at W8 (P=0.0000).

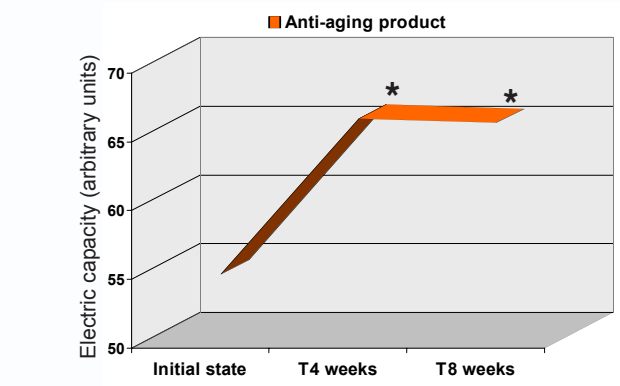


Figure 1 : The daily care cream improves significantly skin hydration at T4 and 8 weeks. *Statistically significant *versus* T0.

- Smoothing effect : decrease of rugosity at W4 (-9%) with persistent action at W8 (-7%) (P=0.004 vs T0). The Figure 2 shows a 3D-representation of an imprint of the crow's foot area before and after 8 weeks of twice daily application of the anti-aging product.

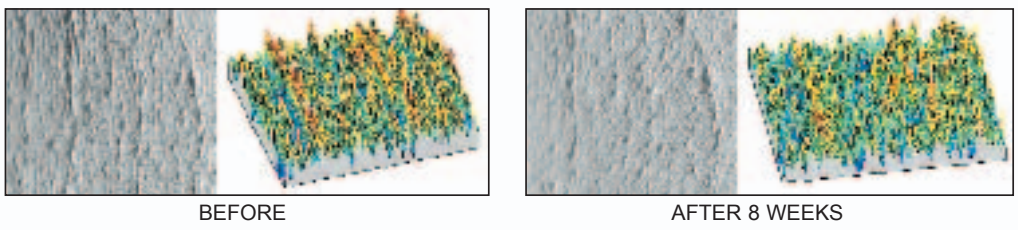


Figure 2 : The daily care cream improves the skin micro-relief.

- Evaluation by the dermatologist (Figure 3) and auto-evaluation by the volunteers (Figure 4) : the skin was noted as smoother, firmer, more flexible, with a more uniform and a brighter complexion (p=0.000).

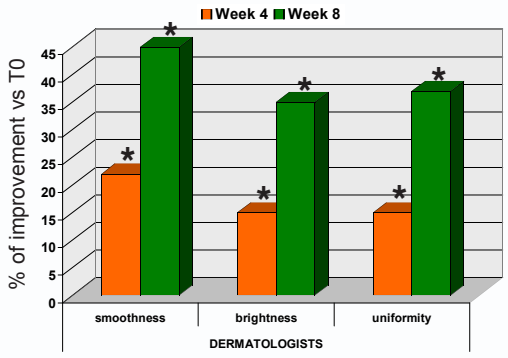


Figure 3 : Improvement of skin parameters. Clinical evaluation by the dermatologists. *Statistically significant *versus* the initial state.

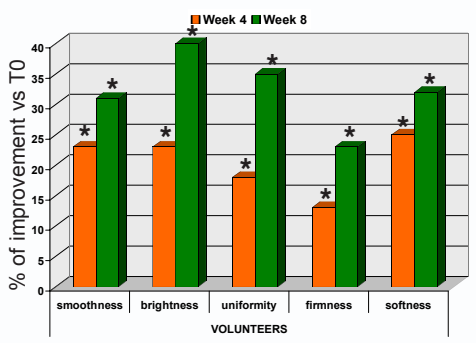


Figure 4 : Improvement of skin parameters. Auto-evaluation by the panelists. *Statistically significant *versus* the initial state.

- Trial B

Among the 118 females included, 17 have been lost of follow-up and 8 stopped the study. Thus, 93 volunteers have been evaluated. They were all phototype II and III. Questionnaires on the extrinsic risk factors of premature skin aging to which the panel of volunteers are exposed are listed in Table I.

Table I : Risk factors of premature skin-aging

Smoking (>10 cig/d)	18%
Intense stress and sleepless	13%
Water consommation<1liter/d	41%
Intense sun exposure	16%
Everyday outside occupations	22%
Absolutely no use of sunscreens	11%

Dermatological clinical criteria were similar to those of Trial A. They revealed similar results between dermatologists and volunteers, with a 28% improvement of skin roughness and a 43% improvement of skin brightness. Clinical data are summarized in Figure 5.
Skin tolerance has been excellent in 89.2% of cases (2 slight irritations with continuation of the study and 8 slight to moderate irritations with study exit). Cosmetic qualities have been evaluated as good to excellent in 87% of cases.

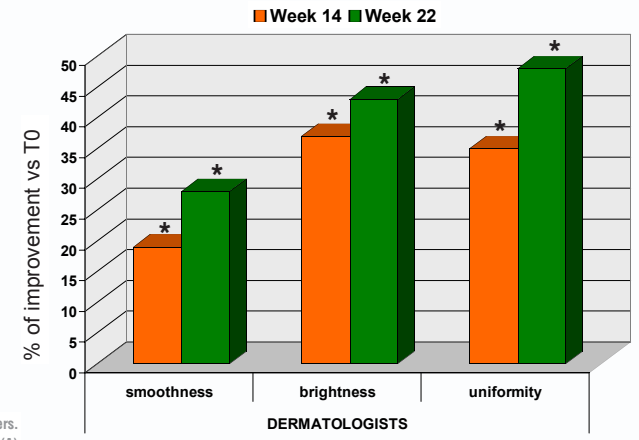
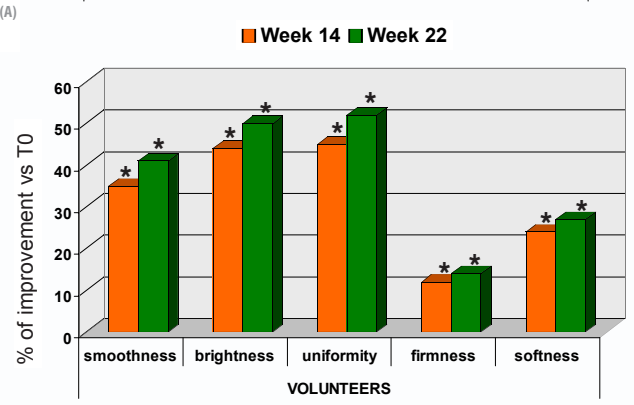


Figure 4 : Improvement of skin parameters. Clinical evaluation by the dermatologists (A) and auto-evaluation by the panelists (B).



Conclusion

It is now obvious that all the mechanisms leading to skin aging begin early in life and that it is possible to slow their damageable effects. The product including Avocadofurane®, patented Pentapeptides and vitamin C represents an original and effective response for the prevention of extrinsic premature skin aging.
Following *in vitro* studies, results on volunteers have shown statistically significant improvement of the parameters studied, either by clinical or by biometrological means. This study has been paralleled by a large in-use test under dermatologic control. Results have been in the same rank and tolerance has been excellent.
This association between *in vitro* studies on separate active ingredients and objective studies with non invasive biometrological technics and large clinical in-use test represents the standard of cosmetic development and should be mandatory for all new products.
Helyx.C®, Noviderm®, Laboratoires Pharmascience™.

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