

Wrinkle Improvement Effects of Anti-Aging Technologies as Measured by 3-D Imaging

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INTRODUCTION

Fast Optical In Vivo Topometry of Human Skin (FOITS) is a non-invasive fringe projection technique which allows 3-dimensional information to be gathered from the skin's surface (1). Importantly, this technique can be used to image wrinkles in the crow's feet region, a key area for patients concerned about age-related appearance. Changes in 3-D FOITS parameters could therefore be used to evaluate the ability of cosmetic anti-ageing products to reduce the appearance of periorbital fine lines and wrinkles.

OBJECTIVE

Subjects' crow's feet were imaged via FOITS to determine the effectiveness of new cosmetic moisturizers containing a combination of niacinamide, anti-oxidant and aminopeptide technologies to:

- ❖ Improve overall skin smoothness
- ❖ Reduce large wrinkle depth

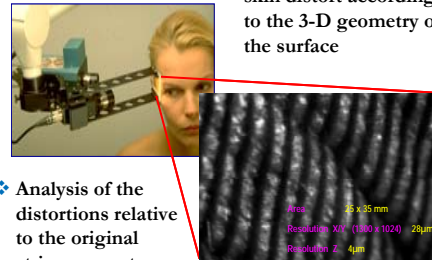
The effect of treatment with these cosmetic products on skin hydration and barrier integrity was also evaluated.

STUDY DESIGN

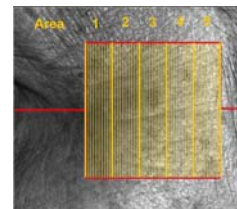
- ❖ Randomized, double-blind, controlled, split-face study (n=42 observations) in Caucasian female subjects 30-70 yrs old with periorbital wrinkles
- ❖ Subjects applied 0.5 g of test product to half of the face twice daily for 4 wks
- ❖ Test products: 1) Daytime SPF30 lotion containing a combination of niacinamide, the aminopeptides Pal-KT and Pal-KTTS, and antioxidants, and 2) Night cream containing the niacinamide plus aminopeptide combination.
- ❖ FOITS was used to measure changes in Ra (mean roughness) and Rz (average maximum roughness) in the crow's feet wrinkles after 2 and 4 wks of treatment.
- ❖ Facial skin barrier integrity was assessed by TEWL (TEWAmeter®) and hydration by Corneometer® (CM 825 PC) after 2 wks and 4 wks treatment.
- ❖ Changes from baseline were analyzed using ANCOVA

FOITS METHOD

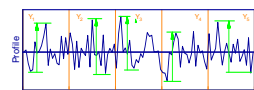
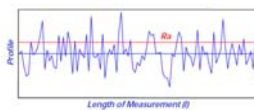
❖ Stripes projected on the skin distort according to the 3-D geometry of the surface



❖ Analysis of the distortions relative to the original stripe geometry yields a 3-D model of the skin surface



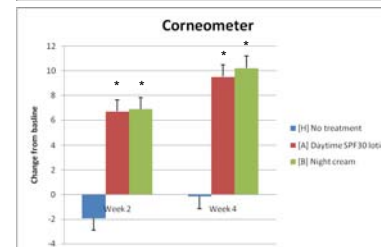
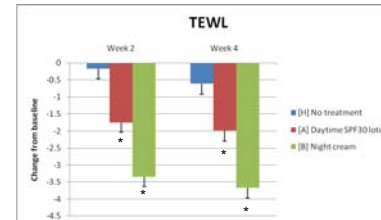
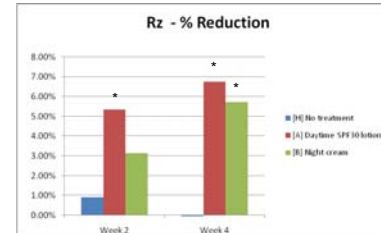
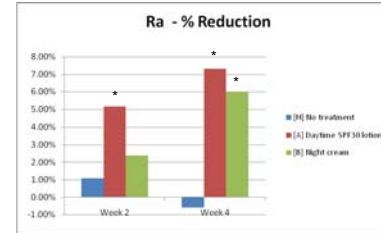
❖ 50 profiles over 5 adjacent areas in the recreated crow's feet foot region are generated and used for analysis



❖ R_a is a measure of the overall residual difference from profile centerline (overall roughness)

❖ R_z is a measure of the peak-to-valley size of the largest features (largest wrinkles)

STUDY RESULTS



*statistically significant vs. no treatment at p<0.05 (1-sided)

CONCLUSIONS

- ❖ Treatment induced changes in crow's feet wrinkles were detected using FOITS 3-D imaging.
- ❖ 3-D imaging is a viable technique for assessing facial wrinkle changes.
- ❖ 4 weeks treatment with either product resulted in significant improvements in smoothness. Significant smoothness improvement was also seen after 2 weeks treatment with the Daytime SPF30 Lotion.
- ❖ 4 weeks treatment with either product significantly reduced the depth of the largest crow's feet features. The Daytime SPF30 Lotion also provided improvements after 2 weeks treatment.
- ❖ Treatment with either product for 2 or 4 weeks significantly improved both skin hydration and barrier integrity.

ACKNOWLEDGEMENT

The authors thank Dr. Mathias Rohr and Dr. Elke Buck of the Institute Dr. Schrader for their collaboration on this study.

REFERENCE

1. Rohr M and Schrader K, *Fast Optical In Vivo Topometry of Human Skin (FOITS). Comparative Investigations with Laser Profilometry. SÖFW Journal*, 124, 52-9 (1998).