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# Skin fluorescence controlled photodynamic photorejuvenation (wrinkle reduction).

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## Abstract

**BACKGROUND:**

Identical skin fluorescence can be obtained after one hour spraying with 0.5% liposome-encapsulated 5-ALA and after 0.5 hour application of 20% 5-ALA in a cream base. In this study the clinical outcome and side effects using the 0.5% 5-ALA in Caucasian skin are investigated and compared to earlier reported non-ablative treatments for wrinkles and improvements of skin texture using 20% ALA photodynamic photorejuvenation.

**METHODS AND MATERIALS:**

37 healthy Caucasian female patients participated in a randomized, prospective split face study. Two different intense pulsed light (IPL) treatment modalities were investigated; both employed a pre-treatment of approximately one hour of spraying with 0.5% liposome encapsulated 5-ALA. One modality combined type I photorejuvenation with wrinkle reduction (C-PDT) using a waveband from 530 to 750 nm and short pulse durations (7 J/cm(2), 2 x 2.5 ms, delay 10 ms). The other modality (PDT alone) emitted a band of wavelengths from 400 to 720 nm, three passes were performed (3.5 J/cm(2), 30 ms pulse duration).

**RESULTS:**

After a series of three C-PDT or PDT-alone treatments, the patients obtained statistically significant (P< 5 x 10-5) reductions in periorbital and perioral wrinkles. Using the Fitzpatrick wrinkle scale, periorbital wrinkles were reduced by 1.2 grades (SD: 1.1) and 1.1 (SD: 1.1), respectively and perioral wrinkles were reduced by 0.8 grades (SD: 1.0) and 0.7 (SD: 0.9) respectively. The difference in treatment efficacy between. C-PDT and PDT alone treated sides was not statistically significant (P = 0.224).

**CONCLUSION:**

The present study shows that statistically significant improvements in wrinkle reduction and skin texture, equivalent to previously reported results obtained with 20% ALA, can be obtained with 0.5% liposome encapsulated 5-ALA. Only minor and infrequent side effects were registered at the 0.5% 5-ALA treated areas. Skin fluorescence monitoring during pre-treatrnent with 5-ALA may improve clinical efficacy, reduce time consumption and increase safety of the treatment.